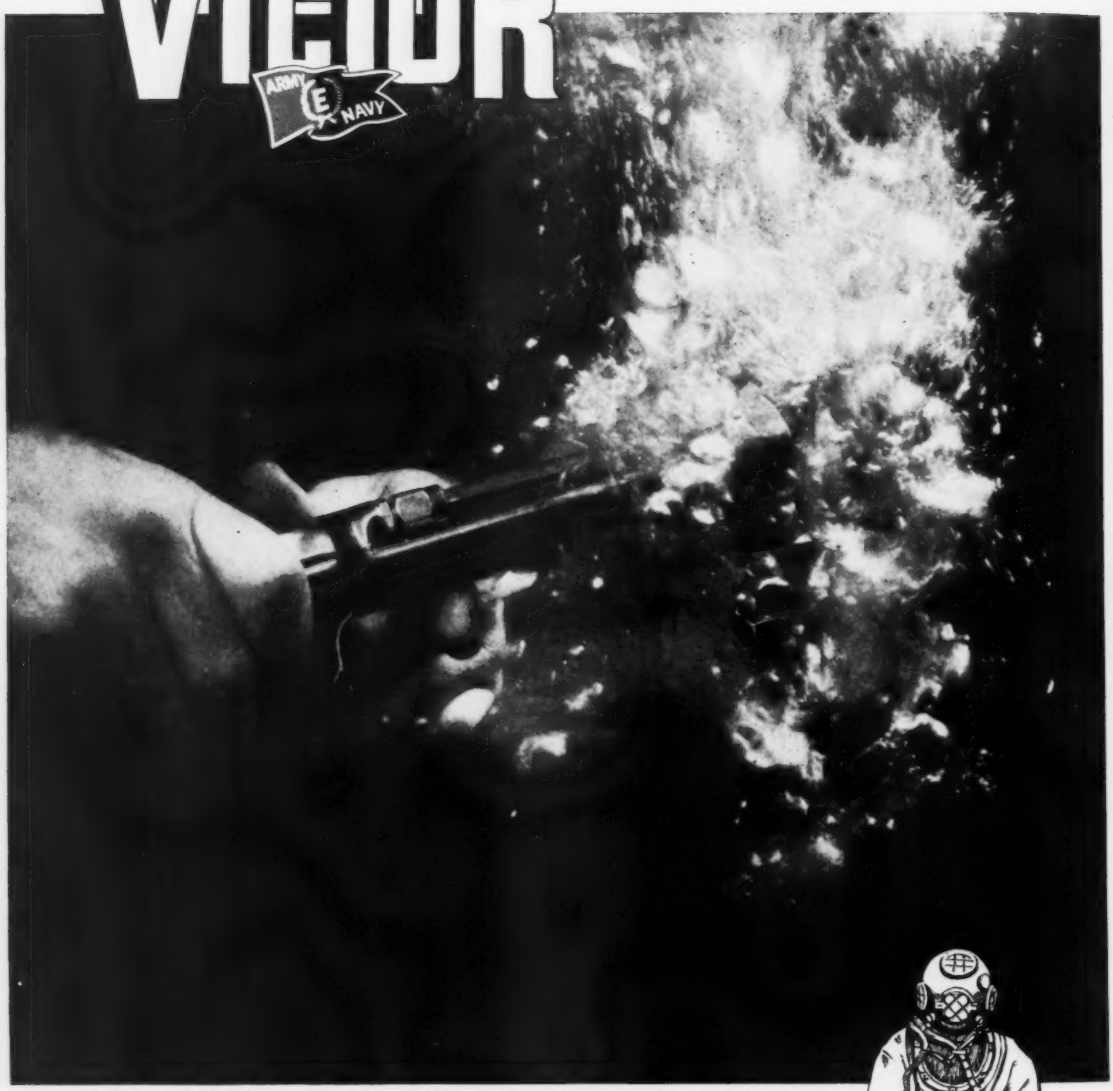
VOLUME VIII NO. 10

WESTERN INDUSTRY

Twenty-Five Cents October, 1943

VICTOR

ARMY (E) NAVY



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EDITORIAL COMMENT

(Communications on any subject of interest to our readers are welcomed. If author wishes, his name will not be used. Unsigned contributions will be disregarded.)

United We Stand

EACH part of the West needs the rest. To prove it, all you need to do is to get some representatives from different Western cities or regions together and see how quickly they find they have common problems that demand joint attention and that surpass in gravity the local questions. Consequently the major chambers of commerce from Pacific Coast cities who decided in San Francisco July 21 to form a permanent conference of Western chambers to bring about united action are to be congratulated for their foresight.

While it is highly laudable for each state or section to utilize its own facilities to the greatest extent possible, nevertheless the fact should not be overlooked that these are outweighed by the common interest and the dangers that threaten it. For example, there is the federal encroachment on ports, tidelands and other local resources which has grown up under the war regime. There is a very real danger that federal officials in charge of portions of the war effort will direct, or at least permit, encroachments that will practically stifle the individual initiative and activity of coast ports after the war. The five governors of the Northwest states have recognized the danger to natural resources in their area and have very intelligently organized a group of their own to protect state interests.

The greatest need in the West today is interrelation of these public organizations, both to handle the problems of today and those of the post-war period. Even in some cities there are many groups working on post-war plans without a central conference to exchange ideas and eliminate duplication of effort. The outstanding fact that must be remembered in the West at all times is its unity of interest. For example, whether Spokane, Portland or Los Angeles converts aluminum ingots into other forms is of far less consequence than the problem of keeping aluminum from moving East across the Rockies after the war is over.

"Mission to Portland"

WITH all the demand that the Russians are making for the opening of a "second front," they might do something themselves about the "Portland front." This is the port through which lend-lease supplies from the United States to Russia via Siberia are funneled, but if the reports to be heard on all sides are to be believed, Russian performance there leaves a lot to be desired.

Their ships take an endless time to load and unload, due apparently to Russian ideas of speed. Because the Russians are so secretive about the date of arrival of their vessels, American army officers are unable to schedule properly the movement of shipments from American factories, and as a result the docks are choked with freight waiting for the uncertain appearance of the Russian ships. Sometimes this means that movement of materiel to American forces in the field is delayed. American army officers are said to be in despair over the situation.

In at least one case, it is reported that after a Russian ship had been completely loaded and the hatches battened down, the captain decided he must have something else, possibly chemicals, at the bottom of No. 1 hold, instead of whatever already was stowed there, say machinery. So everything had to be pulled out of No. 1 hold and reloaded.

These are the stories that are generally current about the lend-lease freight situation at Portland. They sound as though *Pravda* and *Izvestia* had better tone down their second-front demands long enough to send their best reporters to Portland to get the facts. They might learn that to get cooperation they have to give cooperation.

WESTERN INDUSTRY

News, Methods, Solutions to Problems of the Principal Manufacturing and Processing Industries of the West

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OUR COVER PICTURE

• To help speed production of copper, the most critical of all metals, the new Leonard Mine, headframe of the Anaconda Copper Mining Co., Butte, Mont., is being erected, while regular mining operations continue, on top of the old one, built in 1906. Overall height of the new headframe is 179 ft. 3 in. above the collar of the shaft, and 68 by 100 ft. at its base.

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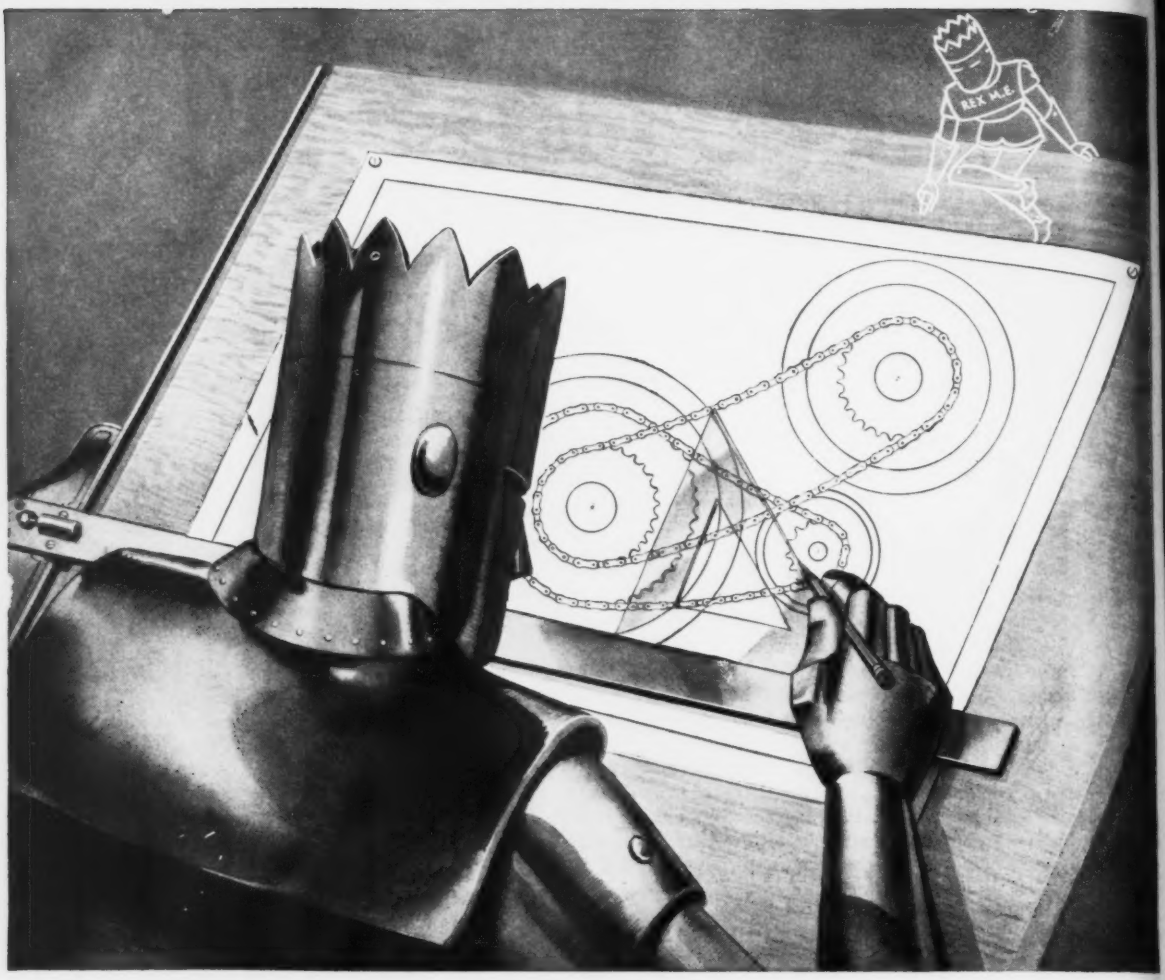

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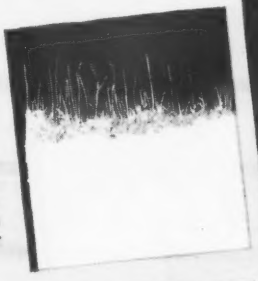
Note that the greater number of asbestos fibres run longitudinally. This is accomplished by orientation of fibres during manufacture, which controls fibre direction and imparts greater "ductile strength."



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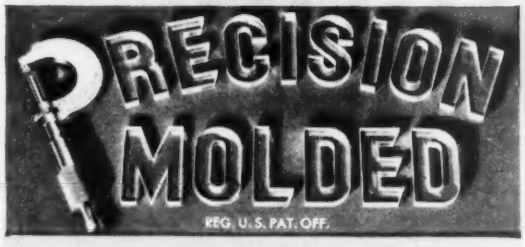

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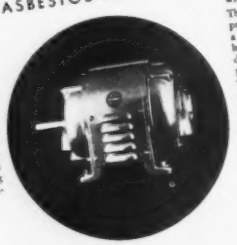
Life of a motor is proportional to the life of the insulation protecting the windings. If carbonization starts to progress, the insulation chemically and physically changes from an insulator to a conductor. Thus, destruction of the windings is threatened from failure of the very thing that was originally designed to protect them.

Materials commonly used for insulation include varnished cloth, oiled linen, paper, press-board, insulating varnish; but *all of these will carbonize.* Not one of them is fireproof. All of these, even the best, will deteriorate under the temperatures at which motors are often called to operate. Repair shops, busy rewinding motors, furnish proof of the continuous carbonization of motor windings.

Contrast such construction with the advanced U. S. Motor method of using Asbestos as the protecting element. While there is no way of protecting motors to guarantee perpetual life, the U. S. Asbestic Process of insulating windings infinitely increases motor life. Danger of breakdown is minimized.

Asbestos is the greatest of all pliable, heat-resisting materials *because it cannot carbonize.* (That's why asbestos is used in automobile brakes.) Being soft and flexible it is an insulation that can be folded and worked into the windings of U. S. Motors. Asbestos is a high heat conductor. It transmits heat away from the inside of the motor much faster than ordinary elements.

U.S. MOTORS
ASBESTOS-PROTECTED



When asbestos insulation was developed by U. S. Motors there was no manufacturing plant in the country which offered the facilities for processing asbestos fibre suitable for U. S. Motors application. No manufacturer of ordinary insulation was equipped, either with machinery or knowledge, to make asbestic material of the kind required, so it was necessary for the U. S. organization to devise means for processing this material.

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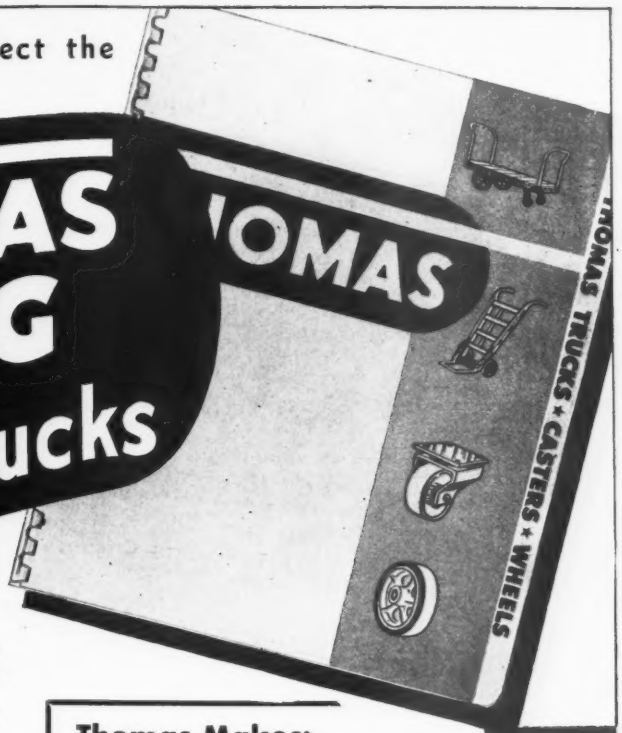

★ This new catalog introduces "Job-Suited" trucks . . . a revolutionary development in the material handling industry. Illustrates and describes more than a score of truck chassis, and over 1000 superstructures to fit them.

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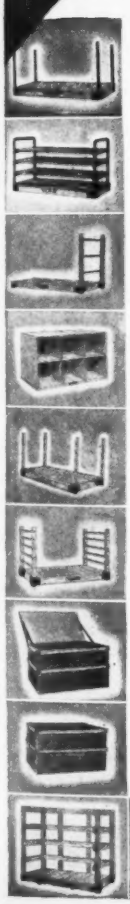

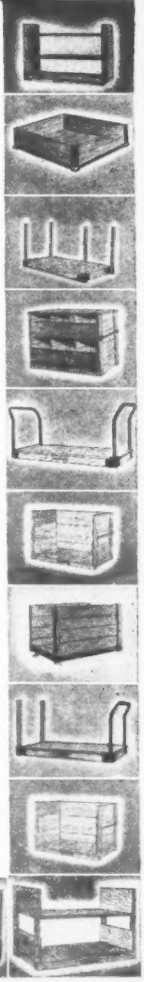

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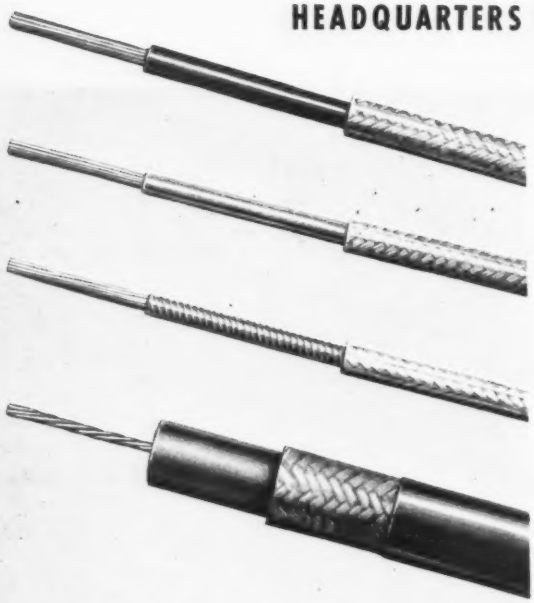

Vinylite and Cotton (AN-J-C-48)—Consists of flexible tinned copper, protected by Vinylite (a synthetic rubber), and covered with cotton braid (coated with a special lacquer). Sizes from 22 to 4/0. Thorough dielectric properties and tough braid throughout.

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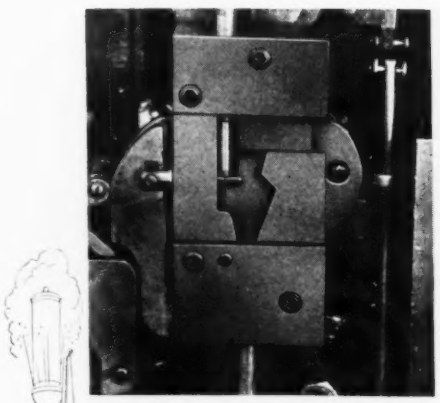

A connecting link assembly machine which replaces human fingers and eliminates the possibility of error.

Machine designers have done amazing things in multiplying power and speed. Even more astonishing are their achievements in creating machine assemblies which perform work that previously only human fingers could do. Baldwin-Duckworth engineers, in constantly striving to give industry the finest roller chain belts for power transmission and conveying tasks, have themselves designed outstanding machines to make them. This connecting link assembly machine, for example, completely replaces hand-sorting of non-symmetrical pins having a tenon at one end and a cotter pin hole in the other. Its mechanical "fingers" turn end-for-end, and place the pins correctly as they come from the hopper, eliminate all possibility of error, and assure a uniformly assembled finished product.

better Drives with Baldwin Roller Chain Belts

Roller chain belts provide better solutions for many drive problems. It is equally true that *better* roller chain belts give even better drives. This fact lends meaning to the precision methods of Baldwin manufacture. It accounts for the unfailing dependability, the split-second timing, jerk-free smoothness and virtually 100% efficiency which characterize Baldwin drives. It is worth remembering, too, that *chain belts are the only medium of power transmission that can absorb shock loading without loss of speed ratios or efficiency.*

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EXAMPLE

This cleaning and plating machine is entirely automatic and operates continuously over long periods of time. It depends upon Baldwin Roller Chain Belts for:

1. Split-second timing
2. Continuous, jerk-free smoothness
3. Virtually 100% efficiency

IT'S BALDWIN-EQUIPPED

better Drives through better Methods

BALDWIN

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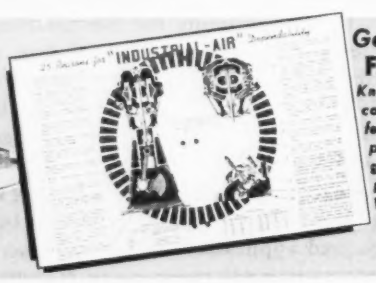

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Spotlight on the NEWS

WESTERN INDUSTRY
FOR OCTOBER, 1943

VOLUME VIII NUMBER 10

Northwest Postwar Plans

Plans for two specific postwar development projects in the Northwest are being worked on, a $38,000,000 program for Seattle and a big one for Portland for which Robert Moses, New York City parks commissioner has been engaged to coordinate plans. New Municipal buildings and extension and rehabilitation of the city's streets and sewers are included for Seattle, the financing to be largely done by the city.

Moses said he was told by Edgar Kaiser that Portland wanted to have a large public works program designed and ready for letting of contracts to employ people released from shipbuilding and other war plants in the demobilization period, thus preventing serious unemployment. The Portland survey is expected to be complete in 60 days.

Los Angeles Ranks Third

Metropolitan county population gains since 1940 have brought the Los Angeles area up to third place in the country, 131,773 ahead of Philadelphia, and San Francisco-Oakland to eighth. Boston has fifth place, followed by Detroit and Pittsburgh. In numbers of civilian population gained since 1940, San Francisco-Oakland and Los Angeles ranked second and third, respectively, surpassed only by Washington.

New York lost 436,028 people or 3.8 per cent of its population, a greater numerical loss than any gains reported elsewhere. Other losers were Scranton with 126,953 or 17.1, Boston with 105,626 or 3.7 per cent, Chicago with 32,113 or 0.7 per cent and Pittsburgh with 11,834 or 0.5 per cent. The figures for March 1, 1943, as compared with April 1, 1940, are based by the Bureau of the Census on registrations for War Ration Book No. 2 and the census of 1940.

The Los Angeles area population is now 3,105,503, that of San Francisco-Oakland 1,701,657. Leading counties in the population gain race are:

	Estimated Civilian Pop. 1943	Gain from 1940	Per Cent
Washington	1,181,347	261,715	28.5
S. F.-Oakland	1,701,657	254,279	17.6
Los Angeles	3,105,503	191,745	6.6
Detroit	2,554,301	180,748	7.6
Norfolk-Portsmouth-Newp. News	457,362	135,802	42.2
Baltimore	1,193,089	119,868	11.2
San Diego	379,719	103,640	37.5
Seattle	606,308	102,955	20.5
Other western counties:			
Portland	491,510	79,281	19.2
Tacoma	205,177	31,915	18.4
Denver	404,820	23,553	6.2
Salt Lake	232,890	21,805	10.3
Phoenix	206,736	20,543	11.0
Sacramento	179,739	9,969	5.9
San Jose	180,334	8,033	4.7
Spokane	169,217	6,597	4.1
Pueblo	73,579	4,709	6.8
Stockton	137,680	3,473	2.6

Big Airport Development

A substantial share of the $20,000,000 which United Air Lines plans to spend within the first 18 months after the end of the war, will go to the new Seattle-Tacoma airport at Bow Lake.

Harvey Hancock, assistant to the president of United says:

"In less than a year's time, the Army Engineers have completed installations at some of the Southwest Pacific air bases which will make the Panama Canal appear puny."

Larger, faster four-engine transport planes, which will bring the Pacific Coast cities within 12 hours of the Atlantic Seaboard cities, will be placed in operation by United as soon as military-plane construction becomes less imperative, he predicts.

Promise New Silk Industry

New machinery that eliminates the former hand-labor bottleneck which formerly stifled an American silk industry enables this country now to produce silk at a fraction of Japan's best price and with superior quality, according to David H. Young of the San Marcos Silk Co., San Diego, and Walter S. Roberts, New York silk manufacturer, testifying before a committee of the California legislature at Los Angeles in August.

"While silk from Japan boasted only 10 per cent high quality, with the remainder inferior stuff, California silk is 92 per cent top quality," Young said.

Roberts said America can now produce silk for from $2.50 to $2.75 a pound, adding that we formerly paid Japan $4 a pound for inferior raw silk. He had no fear of competition from nylon after the war, explaining he is sure nylon will find a ready outlet in plastics.

Both witnesses praised California's climate as ideal for both mulberry trees, on the leaves of which silkworms feed, and the cocoons, in which the worms produce the silk. They agreed that the equitable climate is a vital factor in quality and production.

West Saves More Money

Money is being saved at a greater rate in the eleven Western states than anywhere else in the country. Here are the figures: of the total increase in time deposits in the federal reserve system banks for 1942 over 1941, amounting to $559,462,000, the major portion, namely $308,590,000 or 55 per cent, came from these eleven states. These deposits are largely from individuals rather than corporations.

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UTAH'S PLACE IN THE POST WAR SUN

UTAH'S place in the post-war economy, possibly as one of the most important manufacturing centers in the West, is set forth in a study by Dr. J. R. Mahoney, director of the Bureau of Economic and Business Research of the University of Utah. The title of this new report is "Wartime Economic Changes and Postwar Industrial Readjustment in Utah."

It sets forth the following picture:

1. Probability of construction of a number of steel manufacturing plants to supply the needs of the Mountain States and in some cases the markets on the Pacific Coast, following the pattern that has developed around other steel rolling mills elsewhere in the country. Factors which would cause this future development are:

(a) Pig iron produced at a cost as low, or lower than, any other major steel producing center in the United States, as the result of a close-at-hand supply of high quality raw materials that can be cheaply mined.

(b) The existence in the Geneva Works, built by the U. S. Steel Corporation for the Government, of the most modern, fully-integrated steel plant in the country, ranking well up in size among the large steel plants.

(c) Strategic location of the Geneva Works in almost the geographical center of the western part of the United States, with railroad lines radiating directly to all parts of the West.

(d) Availability in the central Utah area of minerals, including cheaply-mined coal, for making almost a complete line of the alloys of steel.

2. Important by-products which may be manufactured from the ammonia, gas, tar and oils from the coking plant at Geneva.

3. Possibility of making highly concentrated fertilizers at low cost, because of the presence in close proximity of the raw materials for all three of the important fertilizer constituents.

4. Other civilian and military manufacturing operations developed by the war

• Coal tipple and washing plant, Utah Fuel Co., Castle Gate; Cartridge cases, Tooele Ordnance Depot; Loading at Clearfield Naval Supply Depot.

that may continue on a reduced scale or expand into new channels.

5. Existence of the most extensive concentration of military storage and repair facilities in any section of the country, comprising six large plants costing $175,000,000 altogether, which may eventually be available for a variety of civilian uses when no longer needed for military purposes.

6. Absence of any critical post-war unemployment situation, because two-thirds of all the new jobs created in the area by the war have been filled by Utah people.

Observers will have to judge for themselves whether industry will follow the pattern that Mr. Mahoney has indicated as a possibility, but in view of the general westward swing of population and industrial activity that has become so marked during the war his treatise warrants careful study.

Dealing first with the steel-making situation, he points out that the Pacific Coast and the adjacent area for 800 miles inland is largely devoid of coking coal, and that eastern Utah, western Colorado and southwestern Wyoming contain the largest reserve of coal of any similar size section. Although the largest portion of this reserve is non-coking coal, sufficient of the area has been explored and tested to demonstrate the presence of very large supplies of suitable coking coal.

The most important of the developed regions of coking coal in Utah is in the Book Cliff field, approximately 120 miles east of the steel plant site at Geneva, where a bed varying from 10 to 16 feet in thickness will furnish coal for both U. S. Steel and the Kaiser operations in Southern California. Complete mechanized mining operations, drifts at ground level and no necessity for washing combine to make one of the lowest cost mining operations in the United States.

Principal source of the iron ore for the Geneva plant to be operated by U. S. Steel's new subsidiary, Geneva Steel Company, are in Iron and Washington Counties, in southwestern Utah approximately 250 miles by rail from the blast furnaces. Various other deposits are available in New Mexico, Colorado, and Wyoming. Quality compares favorably with the Mesabi Range ore in Minnesota, as indicated by the comparative analysis of iron ores:

	Birmingham[1]	*Mesabi*[2]	*Utah*[3]
Iron	36.64	52.07	56
Silica	15.05	7.64	7
Alumina	3.15	-------	1
Lime	15.09	-------	4
Manganese	0.17	0.64	0.196
Phosphorus	0.33	0.06	0.2
Water	2.07	11.45	3

1—*Typical analysis of ore from Big Seam*

2—*Average analysis of all shipments from the Mesabi Range for 1941. Includes 22.5% concentrated ore*

3—*Average composition as given by Leith and Harder, U. S. Geological Survey*

Utah ore is blasted loose, loaded by steam shovels into trucks and hauled a short distance to the crushing and screening plant, and for the last several years the output per man-hour for all the labor utilized in connection with the mining, screening and loading of the iron ore into railroad cars was in excess of six tons. Recent studies indicate .7 tons per man--hour for the underground mines of Alabama and 3 tons per man-hour for the open pit mining on the Mesabi Range. As the Alabama ore is of so much lower quality, approximately one and one-half times as much would have to be shipped. It is also mined from 3,000 to 5,000 feet underground and approximately four tons of water have to be pumped for each ton of ore produced.

Relative ton-miles required to assemble raw materials for one ton of pig iron are shown by Dr. Mahoney as follows:

	Iron Ore	*Coal*	*Flux*	*Total*
Provo	452	173	10	635
Fontana	309	1,212	1	1,522
Pueblo	690	143	42	875
Birmingham	22	24	3	49
Gary	304*	723	10*	1,037
Pittsburgh	559*	24*	21	604

**Much of the distance over which the iron ore travels to both Gary and Pittsburgh is by water through the Great Lakes. Water distances were adjusted to show equivalent rail distances on the ratio of 9.4 water miles for one rail mile. An adjustment was also made for Pittsburgh, 3.3 river miles for coal were figured as equal to one rail mile. Flux to Gary was corrected in the same way as the iron ore.*

Total ton miles to assemble raw materials for one ton of pig iron and ship one ton of steel (by rail) from producing centers to the Pacific Coast given as follows:

	Los Angeles	*San Francisco*	*Portland*	*Seattle*
Provo	1,382	1,495	1,572	1,748
Fontana	1,580	2,048	2,665	2,847
Pueblo	2,163	2,431	2,365	2,458
Birmingham	2,165	2,663	2,725	2,889
Gary	3,295	3,297	3,327	3,250
Pittsburgh	3,228	3,332	3,335	3,258

Comparative assembly costs for materials to produce one ton of pig iron:

	Iron Ore	*Coal*	*Flux*	*Total*
Birmingham	$1.25	$1.64	$.09	$2.98
Gary	3.52	3.99	.26	7.77
Pittsburgh	5.88	.31	.37	6.56
Provo	2.87	2.16	.14	5.17
Pueblo	4.16	1.49	.43	6.08

Comparative freight rates on selected iron and steel commodities (in gross tons) to the Pacific Coast:

ALL-RAIL RATES	*Pig Iron*	*Ingots, Billets, Blooms*	*Sheet Bars*
Provo	$ 4.95	$ 5.78	$ 6.05
Pueblo	7.70	19.04	19.04
Gary	11.44	24.64	24.64
Birmingham	13.70	26.66	26.66
Pittsburgh	15.41	28.45	28.45
WATER RATES			
Spar. Pt., Md.	10.20	10.20	10.20
Mobile, Ala.	10.20	10.20	10.20

An example of the way freight rates may be adjusted to meet a particular economic situation is the present low commodity rate of $17.25 per gross ton on tin plate from both Pittsburgh and Chicago to Salt Lake City and the Pacific Coast, because of the tin can manufacturing plants on the Pacific Coast.

Completion of the large integrated steel mills at Geneva, Utah, and Fontana, California, should reduce considerably the present $10 to $15 a ton higher price differential on finished steel as compared with eastern steel centers. Also the installation of large rolling mills may subject some of the competing smaller mills on the Pacific Coast, which now depend largely on scrap, to competition that may not be easy for them to meet.

Full utilization of steel making facilities calls for approximately 60 per cent pig iron and 40 per cent scrap in the manufacture of steel in open hearth furnaces, with about two-thirds of the scrap created in the operation of the steel works and rolling mills. At the Geneva Works the scrap may amount to as high as 30 per cent of the original ingot, with even more available if fabricating plants should be built in Utah.

If Utah is chosen over the Pacific Coast for the location of either rolling mills or fabricating plants for machinery or other finished products, it would be due largely to its strategic situation for reaching the Mountain States markets and the three main Pacific Coast industrial areas, thus making possible a producing unit large enough to secure the economies of large scale operations. The higher freight on finished or semi-finished products would be partly offset by their lighter weight in comparison with pig iron or steel ingots.

Combined capacity of the five blast furnaces at Geneva and the U. S. Steel Corporation plant at Ironton, Utah, is 1,654,000 net tons a year, compared with 1,200,000 tons capacity of the open hearth steel furnaces and 900,000 tons of the rolling mill. This will permit more than doubling steel and rolling mill facilities without increasing blast furnace capacity.

As the Geneva Works was designed specifically to meet the specific needs of the enormously expanded shipbuilding program on the West Coast, its steel products, specially from the plate mill, will be far beyond normal peace-time needs of the western market. Consequently additional facilities will have to be installed and the present equipment altered to make it possible to keep the plant running at full capacity. Cold reduced flat products in particular would be suitable for the West, with hot rolled wide strip, hot rolled sheets and seamless tubing as additional possibilities.

Several important recent developments in the production of the chief alloys of steel have been made in Utah. One-fifth of the country's supply of molybdenum is now coming from the Utah Copper Company mine at Bingham as a by-product, and another three-fourths of the total comes from the great molybdenum mine at Climax, Colorado. Some large deposits of tungsten ore are being concentrated at a Salt Lake City plant, vanadium is being produced and milled in western Colorado and eastern Utah and several new potential sources have recently been discovered, an important deposit of chromium is being actively exploited in Montana and a number of deposits of manganese in Utah, Nevada and Montana are being utilized as a domestic source of this important material. Raw materials for ferrosilicon, which accounts for the largest tonnage of any of the ferroalloys, are widely distributed and the chief controlling factor in its production is the cost of electricity. The only important alloy not found in important quantities in the western region is nickel.

Mineral fuel reserves are given by Dr. Mahoney as 31 years, for the Western states and 26 for the United States in the case of natural gas, and 15.5 years for the West and 14.2 years for the entire country for petroleum. Coal reserves are estimated to be sufficient for 51,648 years for the West and 5,221 years for the country. Oil shales ratios are given as 253 years and 68 years. Utah is obviously well off in the wherewithal to produce steam-generated electricity.

Favorable factors for development of the fertilizer industry are (1) the greatest concentration of phosphate rock of any place in the world, (2) a similar concentration of coal deposits for the production of nitrates, (3) the presence in close proximity to both the coal and phosphates of large supplies of potash raw material, the production of which may be stimulated and cheapened by the production of other joint products. Its chief handicap is meager consumption of fertilizer in contiguous areas and the considerable distance to areas of sizable consumption. Production of concentrated fertilizer would be a possible answer, such as ammonium phosphate utilizing the by-product ammonia from the Geneva steel works, with 80 per cent or higher plant food concentrate instead of the 20 per cent in ammonium sulphate.

Although none of Utah's large output of copper is refined in the state, an electrolytic copper refinery is considered by

Cost of Materials per Ton of Pig Iron—Utah and Elsewhere

		Iron Ore		*Coke*	*Flux*	*Total*
BIRMINGHAM	(Value of ore at mine, 2.7 tons @ $1.65).....	$4.45	1.65 tons of coal @ $2.28 (2350 lbs. of coke)	$3.76		
	Cost of assembly.....	1.25	Cost of assembly.....	1.64		
		$5.70		$5.40	$ .30	$11.40
GARY	(Value of ore at mine 1.85 tons @ $2.59)....	$4.80	1.38 tons of coal @ $2.03 (1900 lbs. of coke)	2.80		
	Cost of assembly.....	3.52	Cost of assembly.....	3.99		
		$8.32		$6.79	.45	15.56
PITTSBURGH	(Value of ore at mine, 1.85 tons @ $2.59)....	$4.80	1.38 tons of coal @ $2.01 (1900 lbs. of coke)	2.77		
	Cost of assembly.....	5.88	Cost of assembly.....	.31		
		$10.68		$3.08	.45	14.21
UTAH	(Value of ore at mine, 1.85 tons @ $1.00)....	$1.85	1.60 tons of coal @ $2.20 (1800 lbs. of coke)	$3.52		
	Cost of assembly.....	2.87	Cost of assembly.....	2.16		
		$4.72		$5.68	.45	10.85

Dr. Mahoney as logical, particularly in view of the fact that copper and brass products are now being used by local military establishments. A sizable portion of Arizona copper production is now refined at El Paso, and part of the Montana copper output is refined in the state.

During the last two years the government has completed a building program making central Utah probably the greatest central storage and assembly point for supplies of any place in the country, the total cost being approximately $175,000,000. Ease of distribution to Western points and to the Pacific regions beyond, plus safety from invasion and bombing attack, governed the choice of Utah.

Dr. Mahoney describes them as ideally situated to permit shipment of civilian commodities to this point in bulk, for breaking up for distribution to the western market, and a considerable portion of them as adaptable to manufacturing use. For a considerable period after the war, however, they are due to remain in military hands for military use.

The largest of these facilities is the Utah Ordnance Plant at Salt Lake City, costing $45,000,000 and requiring more than 10,000 employees under full-scale operation. There are three large manufacturing units in this plant, two devoted to 30-calibre and the other to 50-calibre shells. Approximately 15,000 workers have received significant industrial training and experience at this plant, who will be available to prospective operators in the post-war period.

At Clearfield, 30 miles north of Salt Lake, the Navy has constructed one of the largest naval storage depots in the United States, at a cost slightly in excess of $25,000,000.

Just south of Ogden is the Hill Field Air Repair Depot, designed as a part of the long range Army air program, costing more than $30,000,000, and employing more than 10,000 people at present, which would decline to from 4,000 to 7,000 people in peace time. This is one of the most likely military facilities to continue operations after the war, as it is the headquarters and central repair depot for an area extending from Nevada well into the Great Plains.

The Utah Quartermaster Depot is also in the Ogden area, on a site of about three square miles on which an enormous plant has been built costing $30,000,000. It is a great central storage reservoir for an extensive line of military supplies, employs 6,000 people, and is the only complete plant of its kind located west of the Mississippi River except for a small plant at limited facilities at Kansas City.

Just south of Ogden is the Ogden Ordnance Depot and Shell Loading Plant, costing more than $30,000,000 and employing more than 5,000 people. It is the only plant of its kind in the western part of the United States and is largely a permanent Army installation.

In Tooele County in west central Utah is one of the country's largest Army ordnance depots, costing $30,000,000 and located in a 26,000-acre site. In addition to storage, it also carries on salvage of nonferrous metal from used containers, shells, and other products, and repair and maintenance of all types of Army ordnance, which has required a number of very large shops. Its activity is expected to continue at a brisk rate for several years after the war, but after that part of its facilities might be released for metal manufacturing.

Also in Tooele County is the Deseret Chemical Warfare Depot, for the storage of dangerous gases, chemicals and chemically filled ammunition. It's the only plant of its kind in the country and is expected to be in even more active use after the war. Like the Tooele Ordnance Depot, it is in an isolated position and so a virtually self-contained community had to be set up, with living quarters for 1,000 workmen. If abandoned for military use, it might be used for chemical manufacture and storage.

The army's Bushnell General Hospital has been built at Brigham City, 60 miles north of Salt Lake City, a 2,000-bed institution costing in the neighborhood of $10,000,000 and requiring 1,200 employees.

Utah's total of employed workers has grown from 148,900 in 1940 to an estimated 230,000 for the war peak. Manufacturing employment showed a jump in that period from 16,300 to an estimated 51,000 for the war peak. As Dr. Mahoney points out, this increase has taken place to a large extent without importation of outside labor on a large scale and thus poses a smaller unemployment problem when war industries shut down.

Women's Conferences

• Women are not being neglected by the National Association of Manufacturers in its post-war program. A series of conferences with women leaders will include the following meetings: October 11, Salt Lake City; October 13, Portland; October 15, San Francisco; October 18, Los Angeles. Wm. B. Warner, president of the McCall Corporation, former president of the N.A.M. and chairman of its home and industry committee will be the main luncheon speaker in each city, with an afternoon panel following, with local women speakers. Topics to be discussed include inflation and taxation, employer and employee relations, and the post-war outlook.

Local Meetings Instead

• In order to eliminate the need for long distance travel, plans for the Second Annual War Conference of the California State Chamber of Commerce have been cancelled. Instead, a series of regional meetings will be held and tentative plans are now being made for war conferences of the Chamber's membership in Los Angeles, San Francisco, San Diego, Bakersfield, Fresno, Stockton, Sacramento, and Santa Rosa.

Boeing Branches

• Twenty per cent of the work now being done in the main Flying Fortress plant at Seattle will be moved to Boeing branch plants that are being placed in operation throughout western Washington. These will be in Aberdeen, Everett, Bellingham, Tacoma, Chehalis, and other points still to be announced, and additional sub-contracting will be done in Seattle. Over 40 per cent of the work of building the Fortress is already being handled by subcontracting.

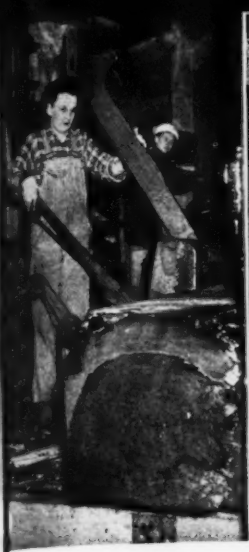
In addition to 157 major subcontractors, who are located in 20 different states, more than 1,500 direct vendors and suppliers provide 10,473 parts.

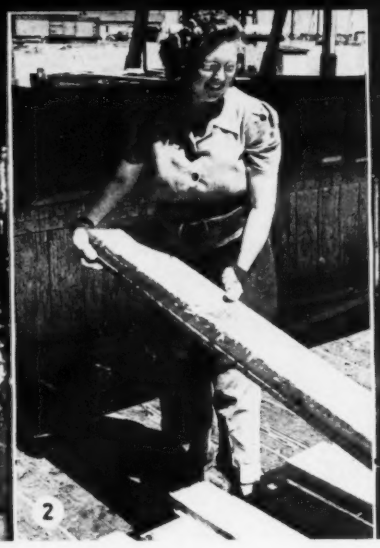
Navy Purchasing

• Centrally located in the hub of Southwest war industries, a new U. S. Navy Purchasing Office has been opened at 711 I. N. Van Nuys Bldg., 210 West Seventh Street, Los Angeles, with Capt. Harry A. Bellows in charge. The office will handle purchasing for the Eleventh Naval District, embracing Southern California, Arizona, and New Mexico.

Explanation of Pictures on Opposite Page of Women Lumber Mill Workers

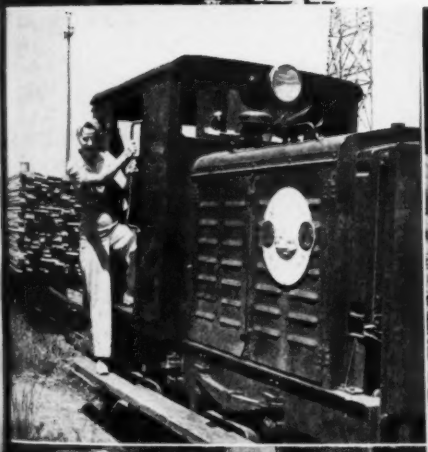
(1) Head dogger on a headrig. Believed to be first time a woman has been employed on this type of job. Levers control heavy hooks, called "dogs" which hold log while it is cut. (2) Pulling lumber from green chain. Lumber at this stage is green, heavy and tough. Note characteristic leather apron worn by workers on this job for protection from slivers, etc. (3) Log deck scaler with scaling rod used in estimating the board feet a log will yield. She also checks and deducts for defects. Duties require quick judgment, considerable physical activity and occasional use of peavey. (4) Tending a small planer. (5) Operating a boring machine in the fabrication of timber connector wood trusses. (6) Tying bundles of finished lumber. (7) Operating the yard locomotive on narrow gauge industrial rail. This job involves teamwork with other employees in such matters as switching. (8) Head saw off-bearer. (9) Gang saw off-bearer. (10) Edger off-bearer. This job is fairly strenuous and requires much alertness. Operator stands in a pit in path of roller conveyor carrying pieces ripped from cants (large unsewn pieces of lumber) which have just been passed through the edger. The job is to push aside to waste other conveyor's edging or other material not wanted in the line of manufacturing toward which the conveyor rolls are carrying the lumber. (11) Lumber straightener. This is an unskilled job but requires certain physical strength and alertness. Job is to keep material straightened out on chain conveyor lanes. (12) Trimmer saw operator. Commonly referred to in mill jargon as "piano player." Requires quick eye and judgment. Operator controls a dozen or more circular saws and trims lumber to length passing in view of conveyor chain. Job has in the past usually been held by an experienced man employee.





Now It's Lumber Jills As Well As Lumber Jacks

That women can not only satisfactorily fill manpower gaps in production lines in shipyards, aircraft plants and various factories where "muscle-might" is not a requirement, but also that they are capable of filling jobs formerly reserved for brawny men in the rugged lumber industry is now being proved on the West Coast. Here are women employees of the Weyerhaeuser Timber Company in Washington. Some of the women have husbands and even sons working in the same mill. Details of the jobs they perform are given on opposite page.



Pioneer Steps Taken Toward Control of Coast Manpower

IT WILL be the first of the year before widespread effect of the West Coast Manpower Program is felt. Although it is the next step to manpower conscription, and many people believe that such a conscription law is already in the offing, the program itself depends on cooperation of various civil and military agencies and it will take time to get them functioning as a team.

The area directors of War Manpower Commission for the coast met in September in San Francisco with W. K. Hopkins, WMC regional director for the coast and Leo R. Werts national deputy director of WMC from Washington to have their duties outlined. Also the Production Urgency Committee and the Manpower Priority Committee for each of the five crucial areas—San Diego, Los Angeles, San Francisco Bay District, Portland, and Seattle—have been appointed and are starting to function. But that just begins the colossal and intricate job of allocating manpower according to the urgency of each war contract.

Meanwhile the letting of all new war contracts in the critical areas has stopped, and as many of these as possible will be done in other areas. The effect on the coast is not immediate, because continuation contracts will be let, so that plants now producing war materials will keep right on.

But the rub will come when cancellations due to changes in war plans are made, like the recent stoppage of tank production at Seattle and Los Angeles or contracts expire and nothing is substituted in their place. WMC officials think there will be plenty to keep coast plants just as busy as their manpower supply will let them, and Smaller War Plants Corporation feels that some production of needed civilian items will be permitted, so that plants who lose out on war work will get a chance to make kitchen utensils, washing machines, farm implements, or something else.

The manpower shortage which the tremendous war production on the coast has caused—California ranks as the first state in the country in both aircraft and shipbuilding contracts and Washington third in shipbuilding—is estimated as high as 300,000, the figure given by Mr. Hopkins. James F. Byrnes, director of the Office of War Mobilization, reckons it at 160,000 persons in shipbuilding and 100,000 in aircraft.

Shipbuilding will require 123,000 additional workers, an increase of 20 per cent, and aircraft plants 55,000 new employees, a 13 per cent increase, according to Don H. Rony, WMC labor analyst at San Francisco, testifying before the Senate Military Affairs subcommittee investigating West Coast manpower problems. Donald Douglas put the aircraft figure at 44,000 by April, 1944, but said that if the present loss of 18,000 workers a month because of turnover continues the need will be 150,000. He said aircraft workers had doubled their efficiency, and although employment in the Southern California plants increased only 4 per cent in the first seven months of 1943, production went up 44 per cent.

How the trimming down of factory payrolls will be accomplished to eliminate the hoarding that is generally reported to exist, remains to be seen. Bernard Baruch says doing away with cost-plus contracts will effect the desired result, but the most common reason given for hoarding labor is fear of having the factory bled white by the draft and miscellaneous losses, with no supply from which to replenish.

The first step along that line was taken in Seattle in August, before the West Coast manpower program was announced, when the shipyards in the state of Washington were asked by A. F. Hardy, district WMC director at Seattle, to present, by September 15, a plan for an industry-wide payroll cut of 10 per cent, which would provide about 14,000 workers for other industries. Apparently this was a rather vague proposition, and no immediate action was taken on it by the shipyards. Hardy's request followed a joint Navy Department, WMC and WPB study and he was quoted earlier that at the Lake Washington shipyards 3,000 out of 8,000 workers could be discharged with a resultant increase in production.

The 9,000 shortage at the Boeing factory will be met in some degree by the increase in beginners' wages granted by the War Labor Board, and also by a campaign to recruit 3,000 workers in the area between the Mississippi River and the Rocky Mountains and in the state of Louisiana approved by WMC. Consolidated-Vultee also has been given permission for a middle-west campaign.

In Southern California a study revealed that about 33,000 high school boys and girls who worked at war jobs in the summer will remain on a part-time basis this fall.

The two committees for each area set up under the West Coast manpower program are virtually one body, since the personnel is largely the same for each. On the Production Urgency Committee, the WPB representative is chairman, on the Manpower Priority Committee the chairman is the WMC representative. On each is a representative from WPB, WMC, War Department, Navy, Maritime Commission, War Food Administration, and ODT. Selective Service and the Committee for Congested Production Areas are listed for the priorities committee only, but it is provided that for each body other agencies may be called in as needed.

War plants will be rated according to the urgency of their contracts, and this rating, with their labor requirements, will be turned over to the priorities committee to allot a labor supply. If the committee feels the plant can get along with less men, it will have to do so. There are no direct teeth in the program requiring compliance, but obviously Selective Service and the U.S. Employment Service between them could make the situation pretty difficult for a balky employer or a balky group of employees, and so could WPB and the procurement agencies through their control of contracts.

What the Program Is

By W. K. HOPKINS
Pacific Coast Regional War Manpower Director

1. **The West Coast Manpower Program is not a building, but a powerful new tool with which the builders may work. Or to use another metaphor, it is the rule book, not the ball game.**
2. **The West Coast Manpower Program is NOT a final and crystalized formula or panacea for West Coast manpower problems. The job must still be done regionally and locally.**
3. **The West Coast Manpower Program IS an enabling document. It will**
   - *a.* **require all agencies affecting the total West Coast manpower problem to act as a unit in determining policies and dealing with regional problems;**
   - *b.* **give to the agencies and their local officers the independence to act on the spot and power to obtain decisive action promptly from Washington where that is necessary;**
   - *c.* **help WMC officials and those of other agencies involved to perfect their organizations for local administration.**
4. **The possible actions outlined in the Plan are not orders but authorizations. Curtailment of industry, extension of subcontracting, and the requirement that all job referrals be made only through the USES will be invoked when and where it is determined necessary. At that time, full consideration will be given to national needs and to the local facts.**
5. **Attention shall be directed to creating in each area and locality a vigorous working community plan and the efforts of the regional office shall be concentrated on stimulating those plans and obtaining supporting action from other agencies and from headquarters where that becomes necessary.**

Welding As It Really Is Taught By Portland Yard

WELDING as taught at Hellship Welding and Training School of Albina Engine & Machine Works, Inc., of Portland, forsakes the old-fashioned method of putting the students on stools; instead they are taught under conditions identical with those encountered on the hulls. Chief Instructor D. W. Smith's method, highly praised by government officials, is as follows:

1. Student makes a vertical pass on bracket. Observe she lies on deck in same position she would use in ship construction.
2. After student is taught to strike and hold an arc, he is taught to tack. Here Instructor Smith holds metal strip in same position shipfitter would hold it on job. Note the trainee's hand and stringer near Smith's foot.
3. Instructor guides trainee's hand while he makes a filet weld.
4. Trainee puts flat filet weld on ear on weight holding down templates. Instructor watches progress through dark glasses.
5. Trainee tacks two flat curved bars in position for a long vertical and overhead filet. It is important to teach student to start a vertical filet and go into an overhead filet without changing position.
6. These large pipes, 30 inches in diameter, are used to teach trainees to travel continuously from a flat weld to an overhead. These positions are common in hull construction. Instructor guides trainee's hand in starting weld.
7. Instructor corrects student's mistakes. Instructor always guides trainee's hand because trainee's attention is concentrated on work under the arc.
8. These difficult positions on hulls (plates close to partitions) make for troublesome welding. At Albina trainees become accustomed to making such welds.
9. Overhead welding is always difficult, and it is imperative that instructor demonstrates these welds. Generally he guides the student's hand.
10. Another demonstration of overhead filet weld.
11. Welding one bracket to another while lying flat on the back. A difficult position.

Avoiding the Pitfalls In Your Incentive Plan

By W. J. McLARNEY
Supervisor of Research, Industrial Relations Department, Hughes Aircraft Company

THE structure of a proper incentive plan must have some degree of permanence. The practice of rate cutting which has characterized many systems in operation has perhaps done more to wreck shop morale than any other factor in the relations between management and labor.

It springs directly from the ill-advised adoption of some incentive plan without first determining what constitutes a reasonable standard of performance.

If management does not provide the working conditions requisite for standard performance, no incentive plan will work. When the same job is being done in several different ways in the shop, standards don't exist. There must be standardization of the whole job, including the environment, the material, the machine, and the operation.

Standardization may be defined as the adoption of the most efficient process after a scientific investigation of the best prevailing practices. The measures should be: the saving of time, the conservation of energy, the cost, and common sense. It is the separation of planning from performance, the substitution of control for random action, and the removal of variables or the restriction of them within defined limits, so that the amount of production will be directly proportional to the amount of energy efficiently expended by the worker.

Where there is lack of control or standardization, production will vary independent of the efforts of the workers. Carefully made time studies will then be of little use, because so many short cuts will be devised by the workers that the rates will be so loose that they will be ridiculous. If management attempts to cut the rates, the workers will rebel. On the other hand, interruptions in production beyond the control of the operators will cause them to be restive. The total result will be the abandonment of the incentive system and the lowering of shop morale.

Installation and maintenance of standards, which on the surface may seem as increased overhead, will pay for itself many times over in increased production. A substantial portion of the greatly increased output that results from the introduction of a good incentive plan can be traced to the standardization process. Management will be surprised by what is uncovered as it goes through the process of standardizing the environment, the machine, the piece part, and the operation.

Standardization of the environment should include such items as light, heat, ventilation, an even flow of work to and from the machines, and "good housekeeping." The most important items in the standardization of the machines are good maintenance and the setting up of proper speeds and feeds.

I believe that in most cases the selection of the speeds and feeds cannot be left to the foreman, because the average foreman does not know the proper speed and feed to use for a specific job. At the beginning of such an investigation it may be necessary to have the grease cleaned off the speed and feed plates so that they can be read. And in some cases it will be necessary to check the several speeds with a tachometer to determine whether or not the machines are

• Time tickets like those below eliminate the complications in computing workers' earnings when incentive system is used.

ORDER NO. | PART NO. AND NAME | EMP. NO. | FOREMAN'S O. K.
MACH. NO. | **STANDARD** | DATE
OPER. NO. | OPERATION
QTY. | NOT FIN. | FINISHED | STD. TIME | F
PCS. SCRAP | PCS. SALVAGE | PCS. REWORK | SET UP YES NO | S

	OK PIECES	HOURS ACTUAL	HOURS STANDARD	AMOUNT ACTUAL	AMOUNT STANDARD
THIS TICKET					
TOTAL TO DATE					

Occupational Rate | REMARKS | DEPARTMENT "J"
Account No.

ORDER NO. | PART NO. AND NAME | EMP. NO. | FOREMAN'S O.K.
MACH. NO. | **REGULAR DAY WORK** | DATE
OPER. NO. | OPERATION
QUANTITY | NOT FINISHED | FINISHED | F | S

	PIECES SCRAP	PIECES SALVAGE	OK PIECES	ACTUAL HOURS	AMOUNT
THIS TICKET					
TOTAL TO DATE					

Occupational Rate | REMARKS | DEPARTMENT "J"
Account No.

ORDER NO. | **NON-PRODUCTIVE** | EMP. NO | FOREMAN'S O.K.
MACH. NO. | OCCUPATION | DATE

CLERICAL | INSPECTION | SET UP | F
CLEANING | MAINTENANCE | GENERAL | S

	ACTUAL HOURS	AMOUNT
THIS TICKET		
TOTAL TO DATE		

Occupational Rate | DEPARTMENT "H"
Account No.

ORDER NO. | PART NO. AND NAME | EMP. NO. | FOREMAN'S O.K.
MACH. NO. | **RE-OPERATION** | DATE
OPER. NO. | OPERATION
QUANTITY | NOT FINISHED | FINISHED | F | S

	PIECES SCRAP	PIECES SALVAGE	OK PIECES	ACTUAL HOURS	AMOUNT
THIS TICKET					
TOTAL TO DATE					

Burden Rate | REMARKS | DEPARTMENT "A" FORGING
Account No.

actually running at the stated speeds. This may seem a bit far fetched but I assure you that I have found it necessary at times.

The average machine shop is far below that which is considered to be average. A thorough investigation of speeds and feeds is necessary, because if they are not set up correctly before the time studies are taken, you can be sure that the workers will kick them up later when they are on piece rates, often to the detriment of the machines and tools.

Handbooks and manufacturers' catalogues are the starting points in the determination of proper speeds and feeds. These values are generally set for new machines and ideal conditions. Actual shop conditions will allow the attainment of from 70 to 90 per cent of these values. However, this will be from 1.5 to 2.5 times higher than those used when the foreman has complete control over the speeds and feeds. A good and convincing place to start the investigation is on the reaming operations.

In setting the speeds and feeds, percentage allowances will have to be made for other than normal positions of the piece being machined. For example, if a drill enters a piece at an angle or if the operation is performed quite a bit above the table of the machine, percentage allowances must be made. After determining the correct tool or work travel in inches per minute, some freedom can be given to the foreman by permitting him to vary the speeds and feeds inversely as long as the correct travel in inches per minute is maintained.

Necessity for all operations should be questioned, the unnecessary ones eliminated, and the others set up in their proper sequence. For example, there is no need for drilling a ½" hole through a piece and then counter-boring half way through with a ¾" drill, when a reversal of the operations would cut the total machining time approximately 30 per cent.

The final step in standardization before taking time studies for the purpose of setting rates is the motion study of the specific operations. Emphasis in this has been constantly shifting from the economy of time to the economy of energy.

Before time studying specific jobs, management should—if it has not done so in the course of the standardization process—call all the foremen together and explain to them all about time study, especially the method of determining the allowances and calculating the operator's pay, and the guaranteed wage. They must be completely sold on the idea, so that they will actually cooperate and not give just lip service. They have to be able and willing to answer all the questions of the operators.

In selecting the operator to be studied, the time-study man should pick a better than average operator to study and set rates on his job exclusively for a week or two, or until the bonus money starts to come rolling in. Then the rest of the operators will begin to show interest and will want to be timed. When they ask to be timed, half the battle is over; and when the union men claim they are being discriminated against because the time study man does not get around to their jobs fast enough, it is time to start thinking about the Wagner Act.

Your time study man should explain to the worker what he is doing and how the rate per hundred pieces is set. He should make his preliminary paper work and sketches sufficiently clear to be understood by others if a dispute case should arise, and sufficiently complete to be useful in the construction of synthetic rates later.

The job must be broken down into its elements, the more the better. The minimum number should be at least five: namely, pick up piece and position, tighten jig, advance tool and throw in automatic feed, machining time, remove piece and dispose. It is most important to separate sharply the machining time from the handling time so that synthetic rates can be constructed.

Working with a continuous watch, the time study man should take enough cycles of the operation to get a typical sample of performance. Generally the number of cycles will vary from 10 to 50. He must have sufficient experience to detect stalling tactics such as excessive handling time and lengthened machining time caused by throwing in the automatic feed too soon and having it set to kick off later than necessary.

After the study is completed, the time study man determines the average length of each element after discarding the abnormally high and low values. The summation of the average times of the several elements gives the basic time per piece. This is usually expressed in hundredths of a minute. To this basic time per piece is added the personal and fatigue allowances. They generally total between 15 per cent and 25 per cent, varying according to the amount of fatigue involved.

Thus is determined the standard time per piece which can be readily converted into expected hourly output or the hours per hundred pieces. This latter factor—the hours per hundred—multiplied by the number of pieces completed, equals the number of standard hours earned. The number of standard hours multiplied by the occupational rate in cents per hour equals the worker's pay in dollars and cents for the job.

The occupational rate expressed in cents per standard hour is the amount of money that management is willing to pay for the type of operation performed. In the drill press department, the occupational rate might be established at 85 cents per standard hour irrespective of who performs the job. There is no difference in the selling price between like articles produced by two men, one getting 75 cents per hour and the other getting $1.00 per hour on a day work basis. Therefore, there should be a flat or an occupational rate of pay established for standardized jobs.

Merit, length of service, and the like should be compensated for by periodic bonuses. However, the determination of the occupational rate will be influenced by the span of the hourly rates that the workers received previously and which they continue to receive when they are working on jobs that have not been standardized—i.e., day work jobs. The occupational rate will generally be below the average day work rate of the department but it must be high enough to permit the workers having a high day work rate to receive a worthwhile bonus above their guaranteed wage.

In the case of the above drill press department, the 75-cent employee would have to reach a productivity of 90 per cent before obtaining earnings above his guaranteed wage, and the $1.00 employee would have to reach a productivity of 120 per cent before earning a bonus. This is a good distribution and will work out well.

As stated previously, the worker's cash earnings are computed by multiplying the number of pieces by the hours per hundred by the occupational rate. However, the worker is seldom, especially in the early stages of an installation, working the whole week on standardized jobs. Not all the jobs will have been rated, there may be unavoidable delays, and from time to time the worker will be called upon to do other duties. All the worker's time, other than that spent on rated jobs, must be compensated for according to the man's day work hourly rate.

The above may seem a bit complicated and violating the principle that all incentive systems must be simple and understandable by the operator. This is easily cleared up by the use of time tickets. The worker punches the time on a white ticket made out in triplicate when he starts a rated job. When he finishes the job the ticket is punched again and the number of accepted pieces is marked in the square provided on the ticket.

When the worker does a day work job he punches a yellow ticket. When he does a non-productive job he is given a green ticket to punch. All the tickets are sent to the payroll department where the rates and money values are entered on the tickets. The first copy is retained by the payroll department, the second goes to the cost department, and the third is returned to the worker.

A man's pay is the sum of the money values. He can and does check his tickets over very carefully. In an efficient organization, any mistakes can be rectified before the pay checks for the week are issued.

This is the first installment of Mr. Hughes' paper, read before the Southern California Management Conference May 29 last. The remainder will appear in November issue.

PACIFIC WAR— Poses Problems For Coast

Transport and Supply Problems May Become Acute for Industry As Military Requirements Still Further Absorb Our Facilities

STEPPING up of the war against Japan poses some serious transport and supply problems for industry in the West, with warehouses chuck-a-block, inventories down and sales up.

"Overhanging far western transportation is an ominous threat—expansion of the Pacific War—which could so increase the load on carriers as to disrupt the entire economy of the region," says Raymond Reeves, regional business consultant of the U. S. Department of Commerce, in his second 1943 quarterly report.

Under the title "Bulging with business—threatened with more," he lists the following examples of western developments which have thrown a staggering problem on Western transportation:

"Army reports trucks in Far West moved 16 times as much freight in 1942 as in 1941, and 1943 load will double the 1942 volume. . . . Pacific Coast ports now handle 37 per cent of the nation's exports as contrasted with 12 per cent a year ago. . . . Pacific Coast to supply nearly half of nation's lumber in 1943. . . . Seventeen aircraft companies with peacetime sales of 311 millions awarded over 22,011 millions in government contracts. . . . Southern Pacific Railroad urgently needs 7,500 more employees immediately. . . . $11,000,000 rail storage yard being built at Auburn, Washington, (population 4,211). . . . Santa Fe traffic in California is more than 100 per cent heavier than in previous peak year of 1929."

On the transportation systems rests the problem of moving supplies and equipment, but industry must figure out how to keep itself supplied. With sales in the Pacific states up 12 per cent for the first seven months of 1943 over 1942, inventories are down 21 per cent, and warehouse space is practically unavailable. In the mountain states sales are only up 5 per cent but inventories are down 19 per cent.

Here is the public merchandise warehouse report for May and June, 1943, showing how space is approaching complete saturation:

PER CENT OCCUPIED

	June, 1943	May, 1943
MTN. & PACIFIC, TOTAL	92.7	91.6
Idaho	92.6	81.7
Montana, Utah and Wyoming	91.1	85.9
Arizona, Nevada, New Mexico	91.3	92.1
Colorado	90.5	86.8
Washington	94.7	95.6
Oregon	85.6	85.0
Calif. except L.A. and S.F.	87.3	83.7
Los Angeles	96.4	96.2
San Francisco	94.5	95.0

Everything humanly possible under present conditions is being done to keep freight moving. Refrigerator cars, that ordinarily move west empty, are now being used as ordinary box cars, industries like the cement people, for example, have eliminated many cross-hauls, shippers are taking less time to load and unload cars, receiving platforms no longer close on Saturdays, sidetracks have been enlarged and increased in number.

If intercoastal and coastwise shipping are resumed, the transcontinental burden will be greatly eased. Pacific Northwest railroads have capacity that would be used to relieve the bottle-necked Arizona-Southern California lines but for the tremendous burden thrown on the north-south lines along the Pacific Coast.

Freight in the western district was 87 per cent higher in 1942 than in 1937 and passenger traffic 141 per cent higher, but the peak still lies ahead.

Western traffic managers have for some time been building up coast stocks, so that temporary cessation of civilian goods movement can be partially offset. On the other hand, the increase in military personnel and movements make further complications, because of the extra supplies for them required. For example, California ordinarily imports 55% of its butter, but now, with so many military camps, it imports 90% of its butter, some of it coming from as far away as Wisconsin.

Because trained railroad men of all kinds are so urgently needed, the California Railroad Commission has recommended draft deferment of railroad workers.

Truck lines are also having their troubles, and this is an important angle of the situation, because two-thirds of the freight in California moves by truck, and a high percentage in other Western states. As an example of their difficulties, there have been cases where for days at a time it was impossible to buy a 10:00x22 tire in either San Francisco or Los Angeles. This is the size used on the big diesel trucks, and the result in such cases is that the trucks so affected simply don't move.

The brightest hope in the heavy-duty trucking picture is that there have been promises of some deliveries of new trucks from the factories probably starting in late November. At the same time, the shortage of new equipment has not been entirely a hardship, because trucking operators who had been accustomed to frequent trading in their equipment have found that they could make their trucks and trailers last far longer than they had ever realized simply by more careful maintenance and purchasing better parts.

Railroads also have been having trouble getting new equipment, locomotives being perhaps the most serious situation, because of the inability to get big diesels desired for heavy-duty work on Western mountain grades.

Profits for shippers of various kinds of low-revenue freight are shrinking, because so many services that truck lines used to provide free are now being charged for, or have to be assumed by the shipper if he wants his freight to be taken. Such items as keeping the loading dock open on a 24-hour basis and having freight ready on one-hour notice, are typical of costly procedure that low-revenue freight shippers are having to assume to get service.

Railroad freight movement for 1943 will exceed the combined volume of the two previous peak years, 1918 and 1939, and the passenger traffic for the first seven months of 1943 will exceed the three years before the war.

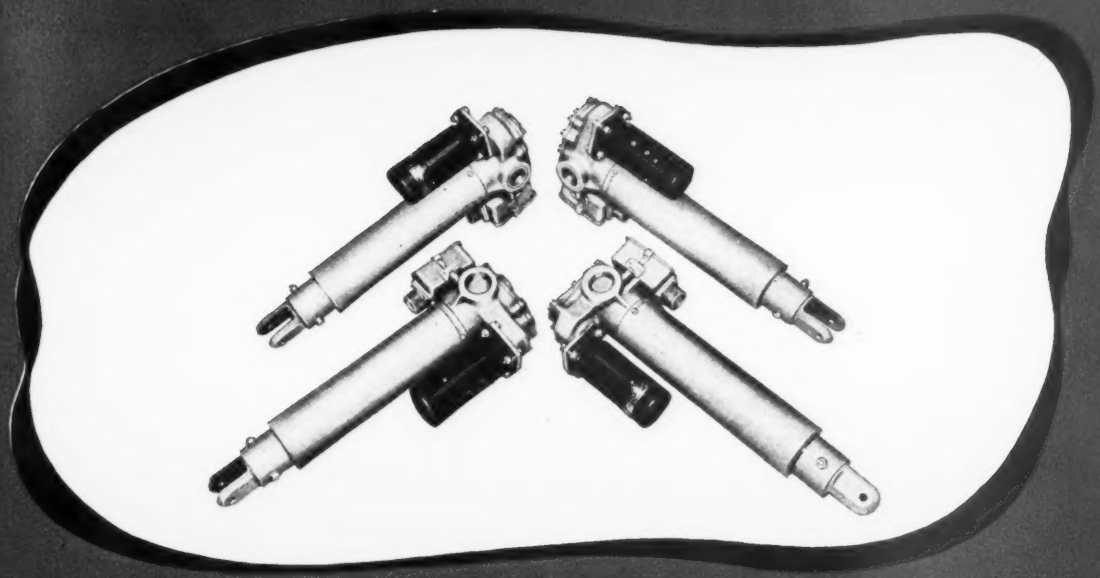
The box car situation in the Northwest is reported extra tight, because of the tremendously heavy grain shipments and lend-lease demands.

Western Supply Picture

	Sales % Change 1st 7 mos. of 1943 over 1942	*Inventory* % Change July 1943 over July 1942
PACIFIC STATES, TOTAL	+12	−21
Automotive supplies	+12	−18
Paints and varnishes	+ 2	(*)
Clothing and furnishings, except shoes	+64	(*)
Shoes and other footwear	+21	−37
Drygoods	+17	(*)
Electrical goods	−15	−38
Fresh fruits and vegetables	+42	(†)
Furniture and house furnishings	+11	−62
Groceries and foods, except farm products	+22	−15
Meats and meat products	+ 4	−19
Beer	+56	−43
Wines and liquors	+25	(*)
General hardware	+ 3	−23
Industrial supplies	+21	+ 5
Plumbing & heat. supplies	(†)	(*)
Lumber, bldg. materials	(†)	− 3
Machinery, equipt. & supplies, except. electrical	− 3	−20
Metals	+36	(*)
Tobacco and its products	+16	(*)
MOUNTAIN STATES, TOTAL	+ 5	−19
Automotive supplies	+ 9	−32
Electrical goods	−31	−53
Groceries and foods, except farm products	+ 6	−14
General hardware	+ 5	(*)
Lumber & bldg. materials	−10	− 7
Tobacco and its products	+82	(*)

(*)—*Insufficient data to show separately*
(†)—*Less than 0.5%*

PACIFIC ACTUATORS



A FINGER TIP CONTROL FOR TAIL SKID

This one is known as the Tail Gunner's Friend

On a number of the new super transports and bigger bombers the design trend is toward tail skids to help land the plane safely.

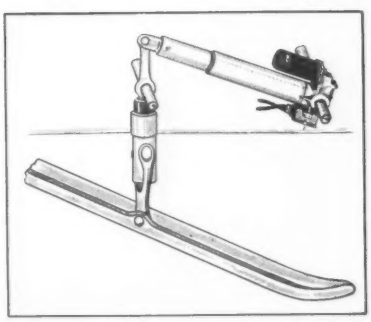
The tail skid, including shock struts which cushion the landing impact, can be lowered or retracted by this Pacific Actuator, Model E-1181.

Although this small Pacific Actuator weighs less than 14 lbs. it will withstand a tension or compression load of 12,000 lbs. (static).

It is a complete power pack suitable for low temperature operation and is furnished with thermal protection and electrical connections.

It is normally equipped with a General Electric aircraft type electric motor but can be delivered with hydraulic or other type power source as specified. Write for the Pacific Actuator Catalog.

TAIL SKID RETRACTOR



PACIFIC GEAR WORKS DIVISION

WESTERN GEAR WORKS

COMMERCIAL OFFICES AT: 11181 LONG BEACH BLVD., LYNWOOD, CALIF.

PLANTS: SEATTLE LYNWOOD VERNON SAN FRANCISCO

Westward Flood of Workers to Continue

Washington Observers Foresee New Industrial Developments to Follow This Temporary Need

One of the best-informed writers at the Nation's Capital, Arnold Kruckman, presents each month authoritative comments on political developments and their practical application to industry of the West. Any reader who wishes additional information may write to him directly, using business letterhead, at 1120 Vermont Avenue, N.W., Washington, D.C. Inquiries will be answered free of charge. You also are invited to contact him personally in Washington. Copies of pending congressional bills may also be obtained free of charge.

By ARNOLD KRUCKMAN

WASHINGTON, D.C.—War Manpower Commission, through the facilities of the U. S. Employment Service and the Social Security branches and other agencies under its control, is telling workers of the East, especially women from 14 upwards, that the three Pacific Coast states need as quickly as possible a total of at least 500,000 employables, particularly for work in shipbuilding and in aircraft plants.

The chief emphasis is placed on the need for "any able-bodied woman." She is told that she will start the job at a minimum of $214 per month, and that she can easily earn $300, and more.

The word is being spread everywhere, by all means of communication used in modern recruitment. They tell the workers the potential employers will advance the cost of transportation and probably other inevitable expenses, the advance to be deducted in easy stages from what they earn.

The word is that you may be able to supply 300,000 of these workers, especially women locally in the West. But the WMC qualify this statement by saying the estimate of the number of jobless in the West is probably liberally over-calculated.

Apparently it is anticipated that the East will be expected to furnish from 250,000 to 400,000 of the fresh workers your plants will need during the next 12 months. And it is quite likely the actual number of additional new workers required in California, Oregon, and Washington, will grow beyond the 500,000 now set as the goal.

This hejira of workers and their families towards the Golden West is expected to take at least 1,000,000 persons to your area. There is no reason to feel that the usual dependents will not be a part of the stream westward. Naturally, all the work will not be confined to shipyards and airplane plants. It is obvious other industries also will need additional help.

It is logical to anticipate that among the dependents of the "able-bodied" women and men there may be many who will be capable of rendering limited service in other industries. It is our understanding that the housing problems, and the problems of supplying food and other necessities implied in the abnormal expansion involved in this extraordinary shift of population, will be tackled by other Government agencies.

Our understanding is that your desperate manpower problems have caused the development of a formula for the three states on the Coast which virtually is the "locally needed" manpower stabilization program in an enlarged form. We were told that on September 15th every living being in the three States who is employed at any kind of job, from office boy to the highest executive is to be frozen in his or her job. They do not like the term "frozen" here, but the effect is precisely the same by whatever word it is called.

The actual fact is that during the period —a year or more—the program is in effect, no worker of any age or calling or skill or either sex will be permitted to change to another job without the permission of the U. S. Employment Service; nor will any one be able to secure a job, any kind of job, except through the offices of the U. S. Employment Service.

A similar method of control has already been applied in the Buffalo area, presumably with success. But this is the first time it has been put into force over an area of such expanse, and in an interstate area. This means of course that no worker can shift from California to Washington, nor can the worker shift from Washington to Idaho or Arizona outside of the three coast states.

The drastic implication of the regulation apparently clamps a rigid limitation on the personal freedom of the worker. It restricts his freedom of choice as well as his freedom of movement, when he is within the area of the three coast states. It has not yet been made clear whether or not he may quit his job and leave the area entirely, without permission of the government.

In the past the labor organizations have challenged the constitutionality of these restrictions. But the issue has never been settled. Obviously if the program does not work, either by reason of the unresponsiveness of the workers—mainly women—or by reason of any legal challenge, the adverse result will be used by War Manpower Commission, and other agencies, to support their demand that a labor-draft law be enacted.

There is a strong intimation here that the present situation on the Pacific Coast will be used as the preliminary to a strong drive for the labor-draft campaign; or that it will be used as an indirect approach to accomplish the result that would be achieved by the enactment of the proposed law, and that the same plan may be introduced in all parts of the country.

If the plan works smoothly it will save Congress from the onus of making legislation that apparently would be very unpopular. When it is demonstrated that the program being tried out on you is practicable and can be put over, it would be unnecessary to make a new law. You will readily understand why the eyes of the whole nation will be focussed on the three coast states the next three or four months.

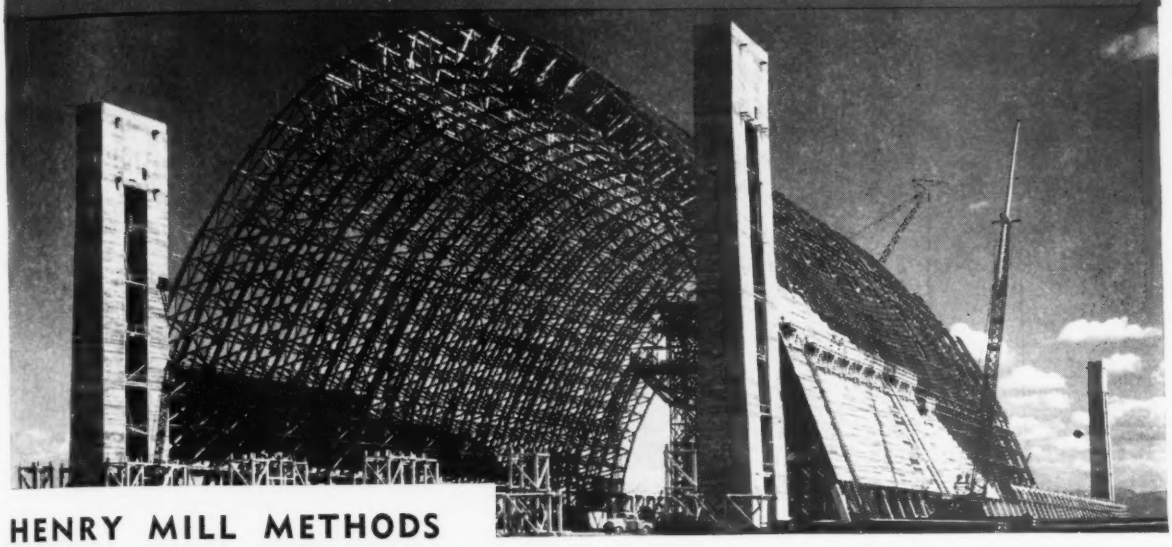
To make the plan work as smoothly as possible they have sent Leo R. Werts out there. He has his office at 1355 Market Street, San Francisco. Mr. Werts is the author of the "locally needed" program. This is considered one of the most adroit approaches to what usually is called socialization.

The "locally needed" program imposes obedience to minimum wage scales, maximum work-hours, protection for women workers, medical and physical regulations, proper housing, protection of children, and other conditions including rigid prevention of racial and other discriminations. Under the "locally needed" program the employer must subscribe to the conditions to have the advantage of the plan. Mr. Werts is deputy executive director, one of the three top officials of WMC.

There should be an extraordinary response to this call for workers in the East. Correspondents and others here, besides Western chambers of commerce representatives, have many visitors, in increasing

(Continued on Page 30)

PREFABRICATED BY HENRY MILL



Henry Mill & Timber Company prefabricated structural framework for 5 of these gigantic blimp hangars for the Navy. More than 10 million FBM of lumber was involved, and fabrication was completed in 8 months.

HENRY MILL METHODS

1 DESIGN ENGINEERING—SPECIALIZED, RESOURCEFUL—A staff of design engineers, thoroughly experienced in the design of wood for all structural purposes, is available to help solve your particular structural problem.

2 MACHINE PRODUCTION—"Assembly line" production methods with specialized equipment enables the Henry Mill to prefabricate heavy timber structures faster, cheaper, and with greater precision than is possible with hand-framing methods.

3 FOLLOW-THROUGH—Henry Mill accepts full responsibility for maintenance of production and shipping schedules—and for assembly and erection in the field where required. Henry Mill follows a standard procedure of periodic inspections and submits maintenance recommendations.

TIMBER Construction Enters New Era!

MODERN timber engineering and machine fabrication has changed wood from a hand-framed material to a more adaptable construction element capable of bringing new speed and economy to many types of projects. HENRY MILL is an acknowledged leader in timber engineering—and in bringing modern machine methods to the prefabrication of heavy timber structures. This organization is at the service of owners, architects, engineers and contractors.

WRITE *For "Prefabrication," a 90-page book now on the press, illustrating in detail Henry Mill methods and engineering detail of many projects completed.*

HENRY MILL
Engineered
PREFABRICATED
TIMBER STRUCTURES
HENRY MILL & TIMBER COMPANY
DISTRICT OFFICES: NEW YORK • CHICAGO • LOS ANGELES • SAN FRANCISCO • SEATTLE
Main Office and Plant: 3001 North Stuart St., Tacoma 1, Washington

KRUCKMAN *(Cont'd from Pg. 28)*

numbers, who wish to know about the opportunities in the West. They ask for factual data, unbiased and impartial.

Apparently many intelligent persons have thoughtfully given consideration to the probability that the impending campaign in the Pacific must develop unusual possibilities in the West, and that even greater opportunities are in prospect after the war when commerce unfolds with the vast populations in Asia and Africa. One of the interesting phases of this curiosity is the fact that soldiers, officers and men and women, apparently have their eyes on the West slope for a new life when peace comes.

There is as much interest here about the eventual fate of your war plants as there is out there among you. They discuss the subject at many conferences, meetings and in committees; but no one has yet formally nor officially answered the question whether the plants will be sold, or whether they will be operated by Government or by private companies, or dismantled. It is very unlikely that they will be dismantled.

Only a remote possibility exists that present doctrines of Government control and social regulation will be sidetracked. Most observers in the East feel that some form of a controlled economy will come out of this war. This obviously spells that the plants owned by Government, with controlling conditions, may be rented, leased, or even sold to those who are able to operate them for some purpose of peace production.

There is considerable sentiment that preference should be given to those in local communities who can put these resources to work. It has been suggested that Government, either national, state, or local, might be encouraged and aided in providing the funds to finance such enterprises.

Long-range thinkers in places of power and influence realize the populations that are being shifted to the West should not become Okies in reverse. The thought is that the needs of the West should be met with the facilities of these plants, absorbing the energies of the transplanted workers. There has been some discussion here about the probability that war plants in the East may perforce become idle before the plants in the West could go back to normal production. But it is assumed that the war products of the Eastern plants either in their present form, or in other forms, will be required longer than the casual observer thinks probable.

There are sound reasons for believing both private interests and Government will not permit plants in the East, capable of being re-converted to resume peace production, to do so to the disadvantage of the potential plants in the West. It would seem elementary logic, however, for Westerners to keep an eye on this situation, and to concert such measures as seem practicable that will enable them to protect their stake in the business of peace.

Encyclopedia Of The Industrial West Done

GEORGE W. MALONE, once State Engineer and Railroad Commissioner of Nevada, has just completed a monumental work that has aroused unbounded enthusiasm and admiration among Westerners in Washington. Malone is known in the West as the moving force behind the Industrial West Foundation, and as the engineer who has been commissioned by the Seattle Chamber of Commerce to define three major industrial areas of the Pacific Slope.

He wishes to make crystal clear that he does not regard the West as three distinct and separate sectional areas, but sees it wholly as one unified empire. He has defined the outline of three areas simply in relation to certain natural industrial unities. He feels it would be tragic to foster any consciousness in the eleven Western states and Alaska and Hawaii that they do not belong tightly knit together in aspirations, resources, and destiny.

This encyclopedic work that Malone has just completed he calls the "Industrial Service Industrial Report," but it should be called the "Industrial Encyclopedia of the West." The work says of itself, "It is an encyclopedia of the resources of the Western Economic Empire, the Industrial Frontier of America."

It consists of 37 volumes, quarto size, over 2,000 pages each measuring 9 inches by 12 inches. Each volume has a thumbnail index, and the whole work is so skilfully indexed for cross reference that there is hardly a question about the industrial West you can't trail to the remotest current fact. It is plentifully implemented with economic geographic maps, and similar charts.

The work was produced by engineers and scientists and technologists in the employ of the states, the federal government, the universities, and in the great industrial and allied groups which have the most authentic and responsible information in detail. It represents a wealth of detail that challenges comparison with any other great world encyclopedia.

Arnold Kruckman, Washington editor for *Western Industry*, as one of the organizers of the League of the Southwest which sponsored the development of the Colorado basin focussing on Boulder Dam, has a very definite concept of the enormous usefulness of a work such as this Industrial Encyclopedia of the West. He says, "In those adventurous and stormy years when I guided the unfolding of the League of the Southwest I almost prayerfully wished for such authentic source material as has been assembled in the Encyclopedia by Malone and his associates. It is priceless to find all the data, processed from many angles, in one accessible place. The work is a Godsend to those who will have to do the job of building the great West that is coming into existence."

Lumber Needs Are Changing

To fit changing needs of the war situation, especially the tremendous requirements for box and crating lumber rather than for heavy construction lumber, the West Coast industry is changing over from industrial cutting of heavy timbers to production that will be 50 per cent boards and dimension within the next few months—something unprecedented in the history of Douglas fir mills.

West Coast Lumbermen's Association report that farm and railroad demand is very heavy.

After Germany is whipped there will be a reduction in total volume, no matter how hard the fight is against Japan, according to the Western Pine Association, and should make available a considerable volume of pine lumber for civilian uses within another year.

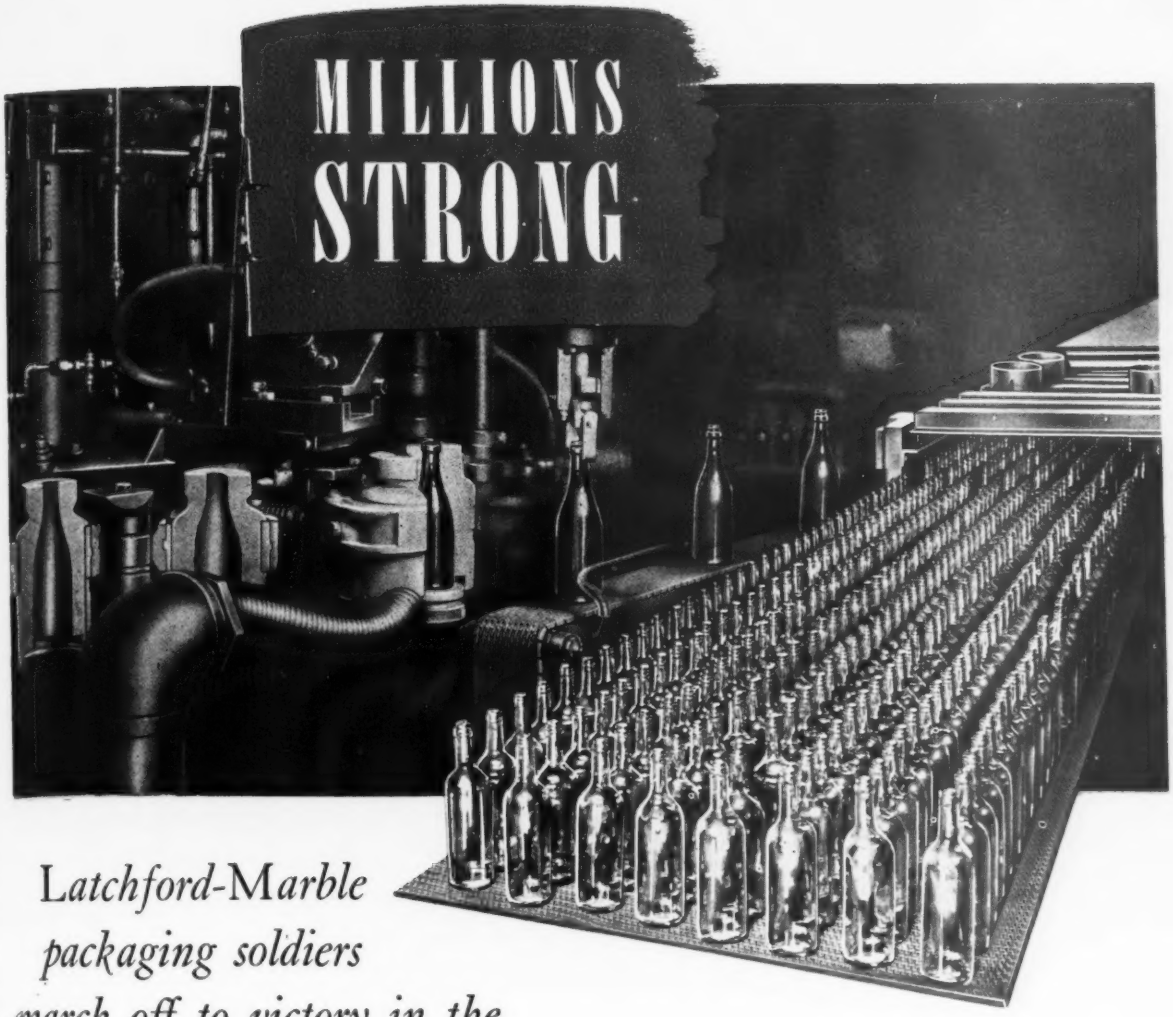
War Plant Disposal

The first step toward handling the postwar problem of war surplus plants and supplies has been taken by the United States Chamber of Commerce through formation of a special committee headed by Albert C. Mattei of San Francisco, president of the Honolulu Oil Company. First meeting of this committee on utilization of war plants and surplus property was held at Washington, September 9 and 10. Other Western members of the committee are Hugh Gallagher, vice-president Matson Navigation Company, San Francisco; Kinsey M. Robinson, president, Washington Water Power Company, Spokane; and S. W. Voorhes, staff assistant to the president, Lockheed Aircraft Corporation, Burbank.

Natural Gas Reserves

A deep band of gas in the Rio Vista natural gas fields in the Sacramento River delta indicates the field has reserves of 4,000,000,000,000 cubic feet, according to C. F. Lynton, executive officer of the California State Lands Commission. Present withdrawals are about 250,000,000 cubic feet a month, indicating a reserve good for thousands of years.

MILLIONS STRONG



Latchford-Marble packaging soldiers march off to victory in the

BATTLE OF THE BOTTLENECKS

Every hour of the day and on through the night, men, machines and materials of Latchford-Marble unceasingly produce quality glass containers. These units, whether bottles or jars, are waging an endless and victorious battle to alleviate the packaging shortages in many new and vitally important industries. Their theatres of operation are varied, industrial—commercial—military—yet they are adaptable to many new and unusual tactics in packaging warfare.

Carefully selected batch materials, automatically controlled furnace temperatures and precision annealing, all contribute to the production of glass containers that are unexcelled for quality, clarity and durability. Glass containers that will deliver the goods, conveniently and economically to any front, for any industry. Units of glass that are made the right way—the Latchford-Marble way. Millions strong, these L-M packaging soldiers march off to Victory in the Battle of the Bottlenecks.

The unexcelled value of Latchford-Marble glass containers for the food, wine, brewing, bottling, liquor, chemical and allied industries is based on 25 years of experience in the manufacture of high quality glass.

LM LATCHFORD·MARBLE GLASS COMPANY

7507 So. Roseberry Ave., Los Angeles, California

in San Francisco: Northern Glass Co., 118 Sacramento St.

WESTERNERS AT WORK...

California

D. F. McLaughlin, West coast regional sales manager, Schenley Distilleries, Inc., with headquarters in San Francisco, elected president and general sales manager of company. Hans S. Hollander takes McLaughlin's old job. . . . John B. Cella, president of Roma Wine Company, Fresno, elected vice president of Schenley.

Robert R. Ranslem has been appointed assistant chief technical engineer, Aircraft Industries Company, Glendale. . . . Peter C. Jacobson, Sr., has become engineer and superintendent of cable division, General Electric, Oakland.

Charles L. Dostal, Pacific Coast district manager, appointed vice president, Westinghouse Electric & Mfg. Co. . . . Richard H. Hughes joined Almquist Brothers & Viets, Los Angeles, as manager, abrasive division. . . . Almon E. Roth, president San Francisco Council of Employers, former alternate member, appointed industry member, War Labor Board. James Tanham, vice president, Texas Company, named alternate industry member to replace Roth.

Louis F. Holtzman, former editor *Western Industry,* has become member of public relations staff, Consolidated Vultee Aircraft Corporation. . . . Lloyd E. Schwab has been elected vice president and manager, Field-Ernst Envelope Company, and Gladys Humphrey has been elected secretary and treasurer of the firm. . . . Walter Innes, Jr., has been named president, Aircraft Components, Inc.

Clark E. Seargeant, owner of Seargeant Transportation Company, Santa Barbara, has been made consultant to the tank truck section of ODT division of petroleum and other liquid fuel transportation of the eleven Western states . . . . R. N. Neidhamer, Mission Dry Corporation, member of Executive and Advisory Board, National Association of Personnel Directors.

Ferris R. Miller, father of Wade Miller, president, appointed vice president in charge of industrial and public relations, Aircraft Tools, Inc., Los Angeles. . . . C. K. Pistell, formerly executive vice president, elected president, and Paul R. Jordan, formerly technical service director, named general manager, Harvill Corporation, Los Angeles.

Edgar E. Lampton, Los Angeles; Michael B. Kunz, Sacramento; and Homer W. Buckley, Oakland, appointed interim members of appeals board of the new California Employment Stabilization Commission by Governor Warren. . . . R. M. Barthold re-elected chairman of Board, California Packing Corporation, and A. W. Eames renamed president. . . . T. Claude Ryan, president, Ryan Aeronautical Company, San Diego, has been chosen president, Aircraft War Production Council, Inc.

Paul M. Downing, vice president and general manager, Pacific Gas & Electric Co., made executive vice president, and A. E. Wishon, vice president, named general manager. . . . E. C. Thomas transferred from Chicago office, United Air Lines, to executive position United's western operations headquarters in San Francisco.

H. H. Pierson, Pacific Coast manager, de La Rama Steamship Co., Inc., has been elected vice president of San Francisco Marine Exchange, succeeding E. H. Harms, who has been transferred to Los Angeles as deputy administrator of WSA. . . . John B. Bryan, president, Pacific American Shipowners Association, elected member of war shipping panel of War Labor Board. . . . Dr. Glen E. Carlson, professor of sociology, University of Redlands, appointed mediator in determining wage rates, a part-time appointment, by U. S. Dept. of Labor, Wages and Hours Division.

James A. Folger, deputy director, has become regional director for War Production Board in San Francisco, replacing Harry H. Fair who has retired to return to private business. . . . Watt L. Moreland, head of WPB Production Service division, Los Angeles, has taken over direction of WPB activities in Southern California, replacing Alexander Macdonald who will return to the law firm of Macdonald & Pettit. Lee J. Mountjoy has taken over Moreland's old job as head of Production Service division.

. . . Keneth J. Wilson appointed vice president in charge of technical service, Smith-Mautz, Inc. . . . Edward G. Bern, formerly sales manager in Washington, now general manager, Hughes Aircraft Company, with headquarters in Culver City.

Chairmen, California State Chamber of Commerce statewide committees: Dr. R. G. Sproul, Berkeley, president, Univ. of Calif., Natural Resources; A. T. Mercier, San Francisco, president Southern Pacific Co., Research; Harry A. Mitchell, San Francisco, president Sacramento Northern Railway, Transportation; S. M. Ehrman, San Francisco, Heller, Ehrman, White & McAuliffe, Tax; A. C. Mattei, San Francisco, president Honolulu Oil Corp., Industrial; A. J. McFadden, Santa Ana, Orchardist, Agricultural; G. G. Pollock, Flood Control; Asa V. Call, Los Angeles, president Pacific Mutual Life Ins. Co., Portwar Economics; Stuart O'Melveny, Los Angeles, president Title Insurance & Trust Co., Social Security; A. E. Goddard, Sacramento, Thomson-Diggs Company, War Service.

Colorado

J. H. East, Jr., Denver mining engineer, formerly in federal bureau of mines office in Washington, has returned to Denver to take charge temporarily of bureau of mines safety office, succeeding W. B. Forbes.

The National Association of Manufacturers held a series of post war conferences in Pacific Coast cities. Here's a group from the San Francisco meeting: Noel Sargent, secretary, NAM; Charles E. Moore, president, Joshua Hendy Iron Works; Dr. Nathaniel L. Whitney, economist, Procter and Gamble; O. H. Fischer, president, California Manufacturers Association; James Mussatti, general manager, California State Chamber of Commerce; Dr. Gustav Egloff, Director of Research, Universal Oil Productions Company, and president, American Institute of Chemists; Wilfred Sykes, president, Inland Steel Company, and vice president, NAM; A. W. Eames, president, California Packing Corp.; E. L. Oliver, president, Idaho Dairy & Mines Co.; W. H. Lowe, president, Paraffine Companies.

Oregon

Cecil E. Collins has been appointed district manager, McCormick Steamship Company, Portland. . . . Willard Constans, formerly sales manager, Weyerhaeuser Timber Company, Klamath Falls, Oregon, has become general manager of Anglo-California Lumber Company, Los Angeles. J. B. Bishop takes over Constans' old job. . . . Henry L. Corbett, Portland, director of Southern Pacific, has been made member of executive committee. . . . Edward Thornton, former general manager Krome Corp., Marshfield, has moved to Salt Lake City. He is to examine vanadium property at Grand Junction, Colorado. His old job has been taken by S. W. Norton.

Utah

Walther Mathesius, vice president in charge of operations for U. S. Steel, has been elected president and director of Geneva Steel Company. Other officials elected, all of whom will serve as members of Board of Directors, are: J. R. Gregory, vice president, sales; J. E. Butler, comptroller; J. Wohlwend, treasurer, and Merrill Russell, secretary and general counsel.

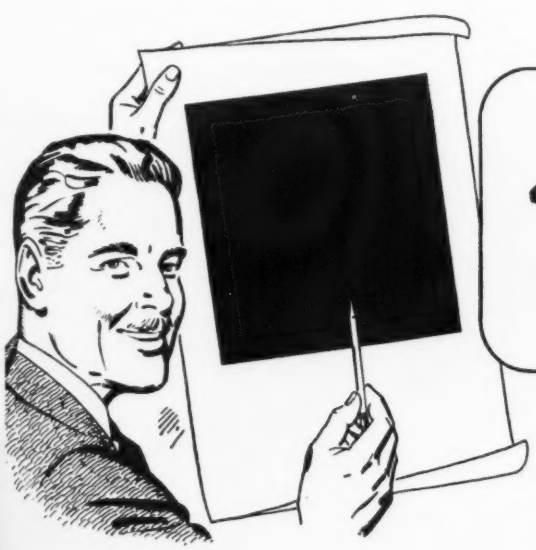
Fred G. Taylor, vice president of Utah-Idaho Sugar Company, has been appointed vice president of United States Beet Sugar Association, with headquarters in Washington, D. C. . . . Leland A. Walker has been promoted from assistant manager of metal mines in Utah to manager of mines by U. S. Smelting, Refining and Mining Company. . . . T. P. Billings has been promoted to assistant general manager of metal mines of the same firm.

Washington

Franklin D. Weaver, former personnel manager, Boeing's Renton division, has been appointed personnel manager Seattle division. . . . Edward T. Jost has taken over duties of port representative of the Recruitment and Manning Organization of the War Shipping Administration in Seattle, succeeding Capt. Roy C. Donnally, transferred to Washington, D. C. . . . James F. Griffiths has been elected executive vice president of James Griffiths & Sons and Winslow Marine Railway & Shipbuilding Company. . . . B. M. Brennan has been appointed director of International Pacific Salmon Fisheries Commission, succeeding Dr. W. F. Thompson who resigned but will act as scientific consultant of the commission.

George K. Comstock, president of Electrical Production, Cons. and executive vice-president, Pacific Huts, Inc., has been appointed Regional Director, WPB for Pacific Northwest. . . . Frank S. McWilliams, past president Spokane Chamber of Commerce, appointed member of finance committee of United States Chamber of Commerce. . . . Ralph J. Cordiner, former West coast man, has been appointed assistant to President Gerard Swope, General Electric Company.

At National Association of Manufacturers' post-war conference held in Portland, Ore.: Paul B. McKee, president, Pacific Power & Light Company, director of NAM, and chairman of Postwar Committee, Rotary International; Manley O. Hudson, Judge of the World Court; S. E. Fletcher, president, Columbia Empire Industries, Inc., and manager, Continental Baking Company; T. H. Banfield, president, Iron Firemen Manufacturing Company, Director NAM.



Interior view

OF A

PAYNE PRODUCT, 1943

It might be a dark-room for Army photographers, a part for a fighting plane or some other accessory or weapon for the armed forces. If the "blackout" leaves you curious, remember that Hitler and Hirohito would be interested, too! ★ PAYNE'S greatly-expanded facilities are now devoted exclusively to war production. And we're all proud of the identification badges we wear; thankful for our important tasks on America's great industrial front, so essential to final Victory.

LOOKING AHEAD—V-Day will find us better-equipped than ever to provide PAYNE Dealers with furnaces engineered for leadership; precision-built of finest materials; tested in our own modern laboratories; and *designed to make friends.*

PAYNEHEAT

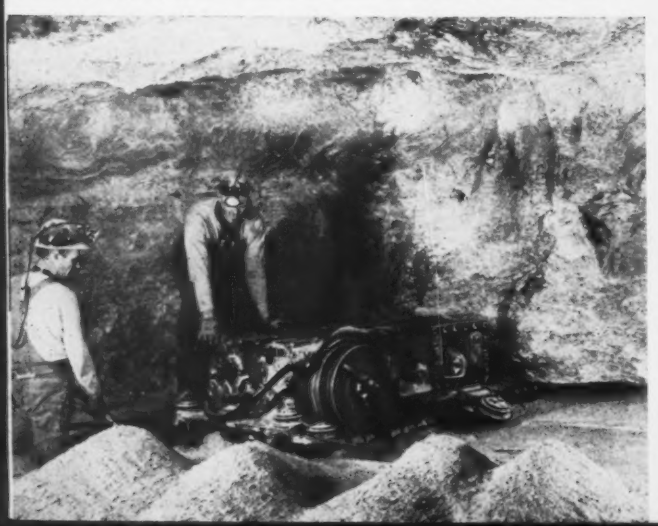
Payne FURNACE & SUPPLY CO., INC., BEVERLY HILLS, CALIFORNIA

WESTERN INDUSTRY IN PICTURES

• New full cantilever monoplane, believed nearest approach to almost complete elimination of strategic materials in military aircraft, is Ryan PT-25. These plastic-bonded plywood primary trainers were recently developed at Ryan Aeronautical Company factory at San Diego, and used for instructing aviation cadets.

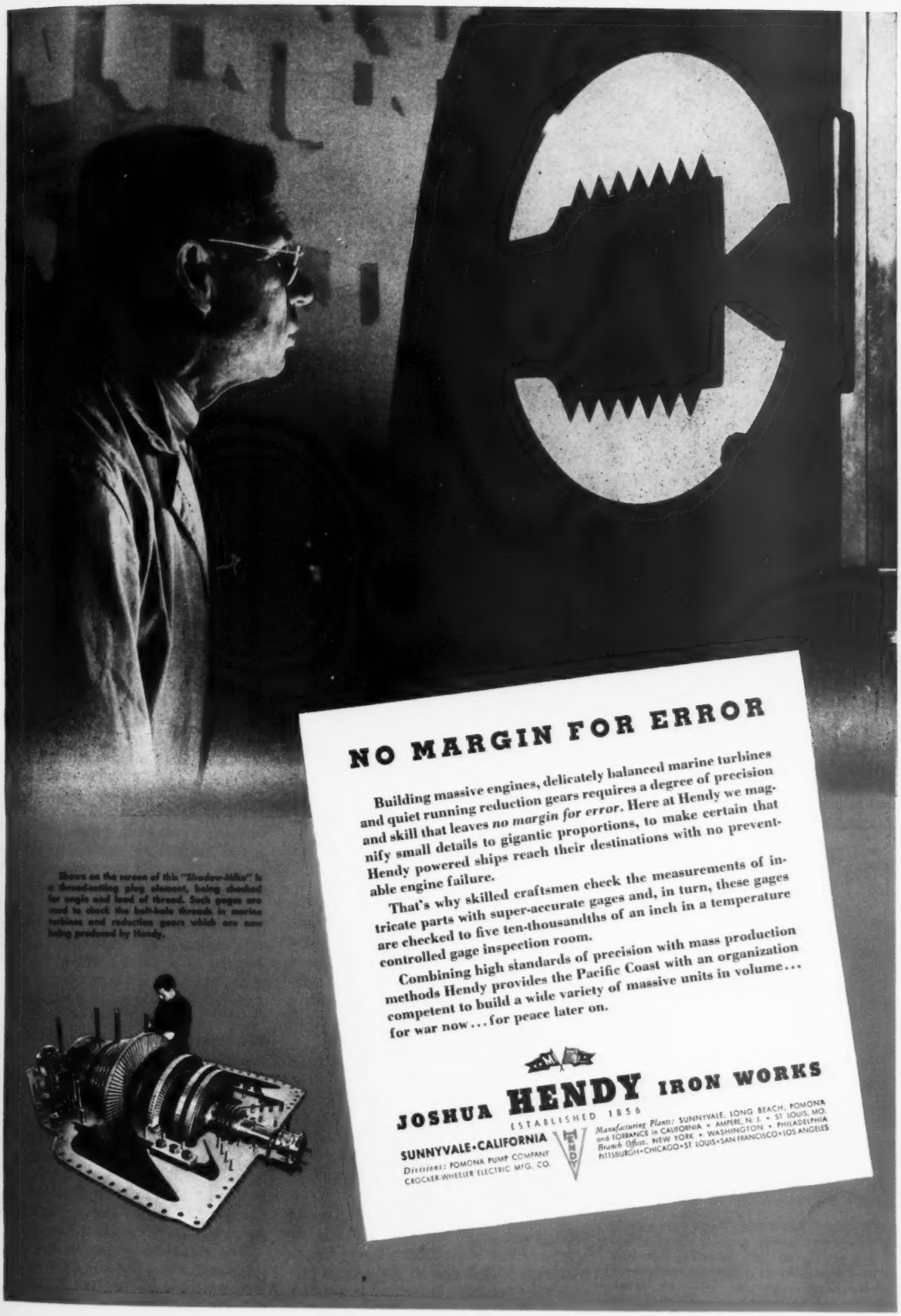
• Manpower shortage problem solved by employment of blind and otherwise handicapped persons in production departments and shipping department of Eitel-McCullough Radio Tube plant, Salt Lake City, Utah. Here are two operators, one totally blind, winding filament for radio vacuum transmitting tubes.

• Sullivan mining machine, equipped with 9½-foot cutter bar replaces manual labor in undercutting the sylvinite bed at Potash Company of America mine, near Carlsbad, New Mexico.



• Blacksmith shop, Oregon Shipbuilding Corp., Portland, showing 1200-pound hammer with 60-ton striking force, used for heavy forge work, and such work as handrails, heavy brackets, etc.

• Stock pile of petroleum coke, used for carbon electrodes needed in electrolytic process separating aluminum metal from its oxide compound. Torrance plant, Aluminum Co. of America.



Shown on the screen of this "Shadow-Mike" is a thread-cutting plug element, being checked for angle and lead of thread. Such gages are used to check the bolt-hole threads in marine turbines and reduction gears which are now being produced by Hendy.

NO MARGIN FOR ERROR

Building massive engines, delicately balanced marine turbines and quiet running reduction gears requires a degree of precision and skill that leaves *no margin for error*. Here at Hendy we magnify small details to gigantic proportions, to make certain that Hendy powered ships reach their destinations with no preventable engine failure.

That's why skilled craftsmen check the measurements of intricate parts with super-accurate gages and, in turn, these gages are checked to five ten-thousandths of an inch in a temperature controlled gage inspection room.

Combining high standards of precision with mass production methods Hendy provides the Pacific Coast with an organization competent to build a wide variety of massive units in volume... for war now... for peace later on.

JOSHUA HENDY IRON WORKS

ESTABLISHED 1856

SUNNYVALE • CALIFORNIA

Divisions: POMONA PUMP COMPANY
CROCKER-WHEELER ELECTRIC MFG. CO.

Manufacturing Plants: SUNNYVALE, LONG BEACH, POMONA and TORRANCE in CALIFORNIA • AMPERE, N. J. • ST. LOUIS, MO.
Branch Offices: NEW YORK • WASHINGTON • PHILADELPHIA
PITTSBURGH • CHICAGO • ST. LOUIS • SAN FRANCISCO • LOS ANGELES

Top Management Must Spark-Plug Safety

By ROGER F. SHELDEN
Industrial Safety Engineer,
California Industrial Accident Commission

A SAFETY program gets results directly proportionate to the effort the top management puts into the program. Past experience has shown that good safety programs, that are given proper executive action, pay for themselves by keeping the direct and indirect costs of accidents at a minimum.

Each accident is an indication that the management or supervision has failed to anticipate a hazard, and to do something to eliminate or lessen its possibility.

We are all human, and we hate to be told of our repeated mistakes and shortcomings. The next thing we try to do is "pass the buck," or place the responsibility down the line, until we blame the injured himself. The reports say, "it was his fault;" "he knew better;" "he should have done this or that;" "he wasn't thinking about the job;" and many others.

All of these admissions of failure are contrary to the fundamental concepts that lead to good accident prevention. These concepts are as follows:

(a) Nobody wants to get hurt or cause a fellow workman to get hurt.

(b) People get injured because they don't know any better, and lack experience and education.

(c) People resent being ridiculed, because they have been injured, or men under them have been injured. They try to withhold facts that may lead to prevention of causes to protect themselves.

(d) Everybody welcomes proper instructions that will provide more safety for them and others.

(e) Instructions are not questioned if they come from the big boss. People always try to figure out what the man over them desires them to do for the pay they receive. If the boss wants things done without accidents, in no other way but the safe way, nobody will take chances if they might get caught.

(f) To tell a man what to do and how to do it, will prevent more injuries than trying to figure out what was done wrong after it has happened, and telling him not to do it again.

(g) There is some good in everyone, and if you look for the good, you can bring it out. A group of skilled workmen working closely together will usually have better ideas of how to solve the little hazards and problems common to themselves. If you can just bring the answers to the surface, the accidents which might have happened can be prevented.

(h) Safety committees must be conducted on a strictly conference basis. No one shall dominate or discourage anybody for anything constructively brought before the meeting.

• PLYWOOD GRAIN BIN. Glued with casein water-resistant glue, passed "overload" test for safety at Los Angeles, and has been recommended as a permanent type of grain storage, replacing iron or steel. Manufactured by Hunt Bros. and Hamilson Mfg. Co. for the Stanton Lumber Company.

Production of Coke Resumed in Northwest

Coke is now being produced in the Pacific Northwest for the first time since 1936, when a cluster of 100 old beehive ovens that had been in diminishing use since the last war finally shut down altogether. Now 17 modern ovens with a capacity of 75,000 tons a year have been in operation since May.

The mine is at Wilkeson, 25 miles southeast of Tacoma, Washington, and the producing company is The Wilkeson Products Co. of Tacoma. They have the only coking coal available at tidewater in the West, the other supplies coming from Provo, Utah, and from Fernie, British Columbia.

Their product is described as a strong coke, low in phosphorus and slightly higher in ash, made from a heavy bituminous coal. Flexibility of the process permits blending with other coal to produce varying types of coke to suit the demand.

Under the process used, carbonization of the coal is accomplished by spreading a relatively thin layer on the horizontal earth heated from beneath, giving a radically different coking reaction than the vertical slot type of coking chamber. Higher yields of tar and less graphitic carbon deposit are claimed for the process. Electric motors are used by Wilkeson, where gas motors have been employed elsewhere in the country where the process is used.

Coal is found at Wilkeson in veins that are nearly vertical, so the coal is dropped by gravity down the slope after cutting.

Corydon Wagner, vice-president of St. Paul & Tacoma Lumber Co. of Tacoma, is president of Wilkeson, and Chauncey L. Griggs is secretary-treasurer. Principal owners of the Wilkeson company are the St. Paul & Tacoma Lumber Co. and the Northwest Improvement Co., a wholly-owned subsidiary of the Northern Pacific Railroad. Construction of the plant was financed by Defense Plant Corporation.

Another Steel Company Establishes Coast Plant

Allegheny Ludlum Steel Corporation of Pittsburgh are establishing in the Los Angeles area their first plant in the West. While the company is now engaged in output of war materials, postwar operations will be in the field of tool, stainless and corrosion-resistant steels and this will be the first such venture announced for the Los Angeles region.

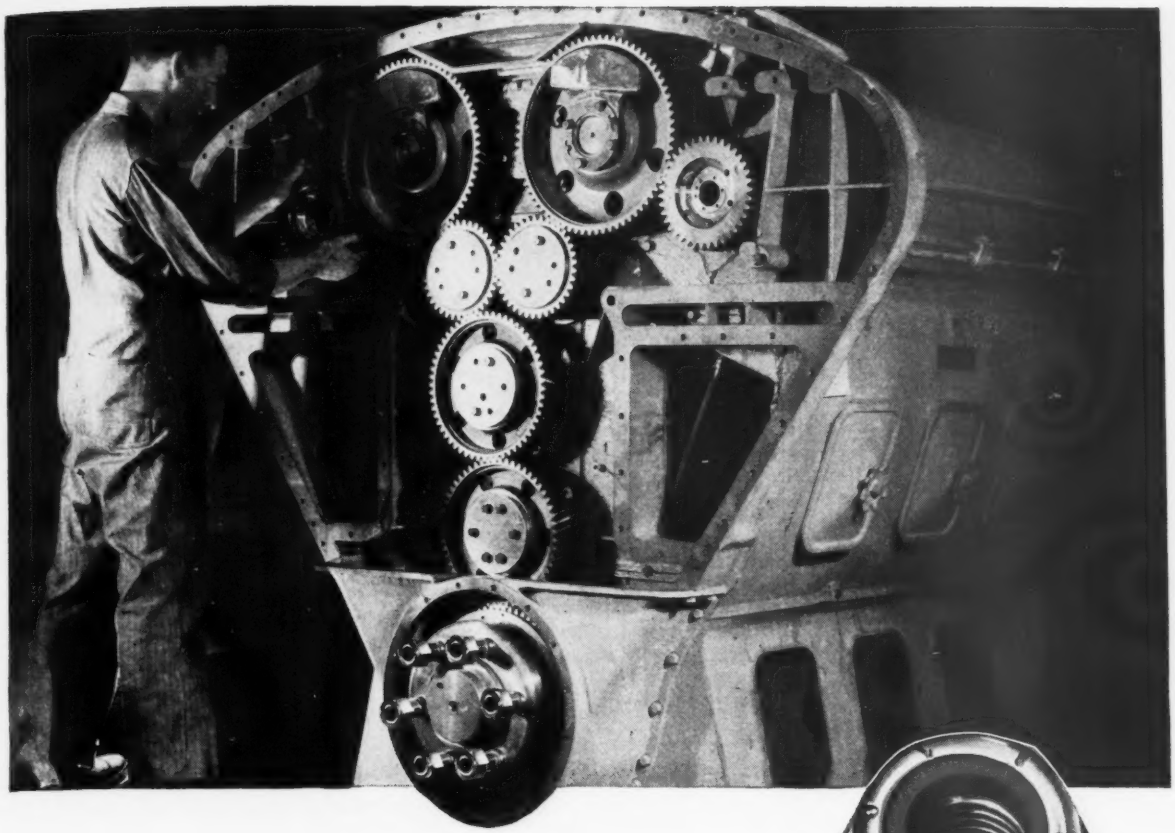
The plant represents a capital investment of approximately 300,000 and covers about half of a three and one-half acre factory site, with plans already drawn for expansion to cover the entire site.

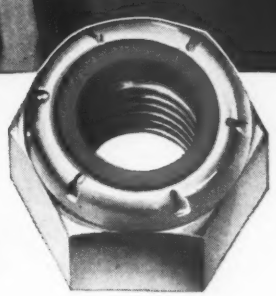
William F. Detwiler, chairman of the board of Allegheny Ludlum, said that the decision to establish production facilities at Los Angeles was made after exhaustive surveys convinced the company that the foundation of a basic iron and steel industry were so solid that possibilities for postwar business could not be overlooked. The company has been operating in Los Angeles as a distributor for the last 16 years, and J. H. Spade, of the Los Angeles staff, will be in charge of the new plant.

Southern California Rubber Plants Expand

The "Big Four" rubber companies now operating in Southern California have launched a $3,000,000 expansion of their tire and tube manufacturing plants. This includes new buildings, new equipment and new machinery for United States Rubber Company, Goodyear Tire and Rubber Company, Firestone Tire and Rubber Company, and B. F. Goodrich Company.

The expansion is part of the national program for new tire manufacturing facilities sponsored by William F. Jeffers, retiring rubber director.





SIX NUTS THAT BRIDLE A THOUSAND HORSEPOWER

THIS is the business end of a powerful Diesel engine.

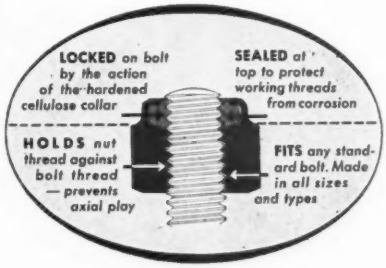
Well over a thousand horsepower spins through that coupling – through those six studs.

To connect that coupling, old-style lock fastenings wouldn't do. They couldn't both lock and be tightened to spread the load evenly. So studs failed.

The solution shows in the photo – Elastic Stop Nuts.

With these fastenings, uniform pressure was obtained as well as complete security against nuts working loose.

In the peacetime production to come, equally puzzling problems will plague manufacturers.


LOCKED on bolt by the action of the hardened cellulose collar
SEALED at top to protect working threads from corrosion
HOLDS nut thread against bolt thread — prevents axial play
FITS any standard bolt. Made in all sizes and types

And we are prepared to help. Our engineers who today are solving war production problems will be ready to share their wide experience with you.

Whenever you have a fastening job let us know. Our men will work with you on it and recommend the correct Elastic Stop Nut to produce a better product or to facilitate its manufacture.

ELASTIC STOP NUTS

Lock fast to make things last

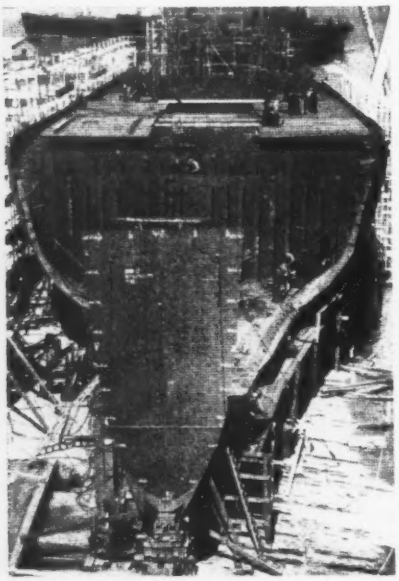
ELASTIC STOP NUT CORPORATION OF AMERICA, UNION, NEW JERSEY

ESNA TRADE MARK

HOW GOODALL RUBBER PRODUCTS SERVE THE INDUSTRIAL WEST

Shipbuilding—

GOODALL hose, boots and clothing help do the job speedier . . . cheaper . . . safer!



Shipbuilding is just one of the many western industries where GOODALL rubber products are speeding the war effort. GOODALL air hose carries the power to the pneumatic tools. . . . GOODALL rubber boots and clothing protect the workmen who must keep the job going under toughest weather conditions.

Western industrial buyers select GOODALL products because they guarantee the dependability and performance so necessary today. Our four district offices in the West, with personnel trained in synthetic and natural rubber, are ready to assist you in developing your current and post-war rubber requirements.

73 Years of Know How—
Our Most Valuable Commodity

GOODALL RUBBER COMPANY
(CALIFORNIA)

LOS ANGELES
510-514 E. 4th ST.
Michigan 2207

SALT LAKE CITY
251 W. SOUTH TEMPLE ST.
Phone 3-8021

SAN FRANCISCO
678-A HOWARD ST.
SUtter 7944

SEATTLE
524½ FIRST AVE., SO.
Elliott 7043

Mills—Trenton, N. J., established 1870

BUSINESS BOOKS

Electrical and Radio Dictionary, by Carl H. Dunlap and Enno R. Hahn. Book, excellently adapted for home study work or for classroom and reference work, contains definitions of electrical and radio terms, symbol drawings and object symbol represents, motor and starter diagrams, electrical formulas, handy tables relating to energy and torque, power, and explanation of National Electric Code Standards including tables for copper wire, motor wiring, etc. Price $1.00. Published by *American Technical Society, Drexel Ave. at 58th St., Chicago, Ill.*

The Microscope and Its Use, by Frank F. Munoz and H. A. Charipper. A practical reference book on the microscope in non-technical language which answers questions on use and care of simple and specialized microscopes and their attachments and gives practical instructions and advice in clear, simple language. Chapter on the microtome is included. Price $2.50. Published by *Chemical Publishing Co., Inc., 26 Court St., Brooklyn, New York.*

Plane Trigonometry Made Plain, by Albert B. Carson. Practical volume dealing with fundamentals of plane trigonometry, placing emphasis on application of trigonometric principles in solution of everyday problems, including many figures and illustrative examples and logarithmic and trigonometric tables. Price $2.75. Published by *American Technical Society, Drexel Ave. at 58th St., Chicago, Ill.*

Choosing Women for War Industry Jobs, issued by Women's Bureau, U. S. Dept. of Labor. Price 5c. *Supt. of Documents, Government Printing Office, Washington, D.C.*

Employee Retirement Plans—60-page handbook which summarizes the new Treasury Department regulations on Pension Trusts, is intended to serve as competent guide to lawyers and managing executives and contains latest thinking by practical pension planners and managers. Price 35c. Published by *New York Journal of Commerce, 63 Park Row, New York.*

How to Plan a House, by Gilbert Townsend and J. Ralph Dalzel. This well-illustrated book shows how to design every single part of a house, including every possible phase. It starts from the very beginning and develops each necessary step of house design piece-by-piece. Price $4.50. Published by *American Technical Society, Drexel Ave. at 58th St., Chicago, Ill.*

Proper Marking Prevents Straying

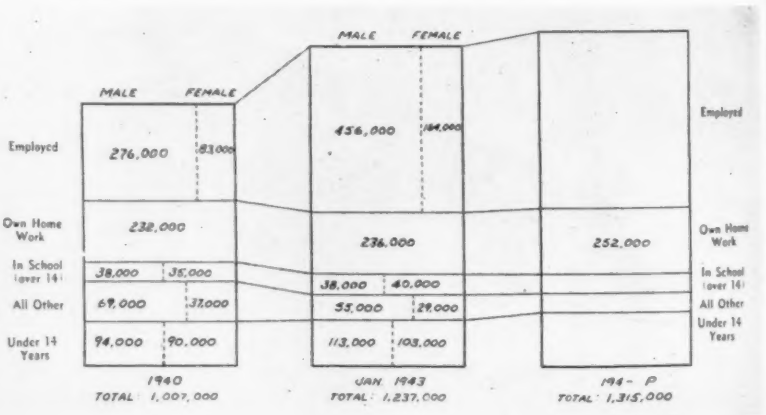
"If shippers would put a plain legible mark on their packages and be sure all other markings are cut off or scratched out in such a manner that they can't be read," said Frank Satterlee of the Union Pacific at the last Pacific Northwest Transportation Advisory Board conference, "that carton or package will get to destination without going astray."

Said Captain Charles F. Ballou of the Air Corps Intransit Depot, Baker Dock, Tacoma:

"I have noticed amongst our own men on the dock that a box that is well made and carefully marked is handled much better and with more care than a poorly crated job, a poorly marked job or a carelessly put together package. I don't know why it is but I have noticed that well-crated, well setup freight is well handled and generally carelessness comes with a poor-looking job."

MANPOWER IN THE PUGET SOUND REGION OF WASHINGTON

(Comparison between 1940, January 1943 and the war peak. The Bureau of Business Research, University of Washington, by whom this chart was prepared, have estimated the war peak as coming in late 1943 or in 1944)



"Say-y, Jim—have you seen Jorgensen's new book on NE steels?"

"Just received mine, and it's sure a honey! Has all the stuff I've been looking for . . . right where you can put your finger on it. It's got answers to the practical every-day questions that are always coming up . . . f'r instance, do you know which of the NE types are alternates for A-4615 . . . and . . .

"It also contains other useful information. See, right here it gives the Brinell equivalent of Rockwell C-32 —just what you were asking yesterday. Yeh, you can borrow it, but be sure to return it . . . why not ask 'em to send you a copy too?"

". . . the AISI equivalents of the SAE steels . . . how the physical properties of the NE alloy steels compare with AISI alloy steels . . . the chemical analyses, critical and working temperatures of NE steels . . . the sizes and types of NE steels now available in warehouse stock?

Send now for your FREE copy—It'll help you select the right NE alloy steel for your own particular requirements. Write, wire or phone the Jorgensen office nearest you.

EARLE M. JORGENSEN CO.

STEEL

10510 S. Alameda Street
Los Angeles 54, California
Phone: JEfferson 9121

1657 Twenty-Second Street
Oakland 7, California
Phones Oakland, HIgate 2030
San Francisco, ENterprise 10942

5311 Clinton Drive
Houston 1, Texas
Phone: CHarter 4-1761

Container-Making Equipment In Demand

EQUIPMENT to produce containers for tomatoes, grapes and other fruits and vegetables being transported to the market in huge quantities, both for the armed forces and civilian consumption is in particular demand at the present time, the Used Equipment and Machinery Section of the Redistribution Division of WPB at San Francisco reports.

Extensive search is being made for box making machines, shook feeders and cast iron nailing machines to satisfy this demand. Many inquiries also have been received for all types of machine tools, including turret and engine lathes, radial drills and milling machines.

An urgent request was received recently for a 250-ton crane, and continuous calls are pouring in for irrigation pumps, laundry and bakery equipment, and for single phase fractional motors.

As a direct result of filling a request from another Government agency on the east coast for three motor generator sets, a San Francisco supplier offered the division additional motor generator equipment, amounting to $25,000, for distribution throughout the war industries, thereby indicating their satisfaction with the facilities of the War Production Board for redistribution of used machinery and equipment.

Nearly 30 Nevada used equipment dealers met in Reno September 7 to hear the WPB plans explained by John Barker and Harry Falkell of the San Francisco redistribution office. E. S. Bender, Reno representative of WPB, presided. There is not so much equipment on hand in Nevada as there is need for motors and mining equipment.

Some of the items most needed by the Materials Section are:

Electrical equipment of any kind
Containers of all sizes and kinds
Textiles of any sort
Bolts, nails, screws
Valves
Fence, barbed or plain wire
Lumber and bldg. materials, used or new
Plumbing equipment
Miscellaneous hardware items
Railroad rails and accessories
Paints, lubricants, acids, chemicals
Idle stocks of any critical material

In the Steel Section the greatest need is for steel plates, thickness ¾-inch and heavier, cold finished carbon bars, large rounds, hexagons and flats and cold rolled steel sheets of all gauges. Surplus items are structurals in angles, beams and channels except very large or heavy.

On Hand

San Francisco firm has:
12,800 cases 5 gal. honey containers, 2 cans per case.

Tool company has:
23,400 - 5/8 in. Hex nuts 18-NF. 1/16 in. across flat.

Hollywood firm has:
2,300 13V, 300W, 5000 RPM, DC generators, wt. 17½ lbs.

A lumber company has:
One Climax Mfg. Co. 70-ton locomotive.

San Francisco company has:
200 Pcs. 4 in. extra heavy steel pipe 3 to 4 ft. lengths.

Mfg. company in Los Angeles has:
20,196-lb. ground cold rolled stainless steel strip, .031 x 8-3/16, Edure type 302.

In Mendocino:
300 Tons 30 lbs. & 300 tons 35 lbs., relayer rails in abandoned track.

In Los Angeles:
1,000 ft. 7/16 in. OD, 5/16 in. ID, red reclaimed rubber tube.

In Oakland:
27 6 in. Gate valves, 6 in. stand flange fabricated, 150 lbs. tested and Navy inspected.

In hands of a pipe and steel company:
160 Relief valves, Kerotest-Butane tank fittings.

Post War Commercial Aviation Problems

In his paper "Post War Commercial Aviation" presented at the 1943 West Coast Regional Transportation and Maintenance Meeting of the Society of Automotive Engineers in San Francisco, Thomas Wolfe, vice president of Western Air Lines, listed terminal facilities as one of the commercial engineering problems to be faced.

"Close-in terminals with trunk highways to distribution centers, coupled with adequate warehouses and refrigeration, have received too little attention . . . Only 240 trunkline stops are now served by the air lines, yet there are 3008 airports (Class I-III), not including new military fields, and some 3464 cities not yet served by air lines that will demand attention in the terminal problem.

"Factory landing strips for the contract and industrial flyer create an entirely new problem. In addition there are over 350,000 miles of new route mileage applications before the Civil Aeronautics Board. . . . Cities and nations should trim their sails for an expansion of forty times present operations. Route and terminal facilities should be started long in advance of the transition. Commerce and industry must anticipate a conversion of air economy."

Under the heading of "Manufacturing Outlet" his conclusion was: "The trend toward larger airplanes will of course reduce the number of planes needed to handle our domestic tonnage after the war. It is possible to perform the four billion ton mile service in this country with 1836 planes averaging between two and twelve ton capacity. Plane production in 1943 is expected to reach capacity for 638,000 tons of aircraft."

Aircraft Suppliers

• Eleven airframe manufacturers in Southern California are now being supplied equipment, accessories and parts by 1044 Los Angeles County firms, representing an increase of almost 900 in the last two years. Some of the increase has been in the launching of new enterprises, but most of the gain has come from conversion of plants from civilian to war work.

OPPORTUNITY SECTION

This widely-read column can help you to sell your used machinery and other used equipment. For rates, write to the Opportunity Section, *Western Industry*, 503 Market Street, San Francisco, California.

MULTI-SPEED MOTOR

30 HP, 4 SPEED, Constant HP, 6-8-12-16 Pole, 220-Volt, 3 phase, 60 cycle, Type CS, Westinghouse Sealed Sleeve motor, complete with
2 Slide Rails
1 Bulletin 9402H15C Cutler Hammer Pole Changer
This equipment has had very little service. Looks like new.

LITTLEJOHN-REULAND CORPORATION

Rewinding JEfferson 5255 — 2655 Santa Fe Avenue, Los Angeles, Calif. — Repairing JEfferson 5255

TRANSFORMERS

Used and Rebuilt

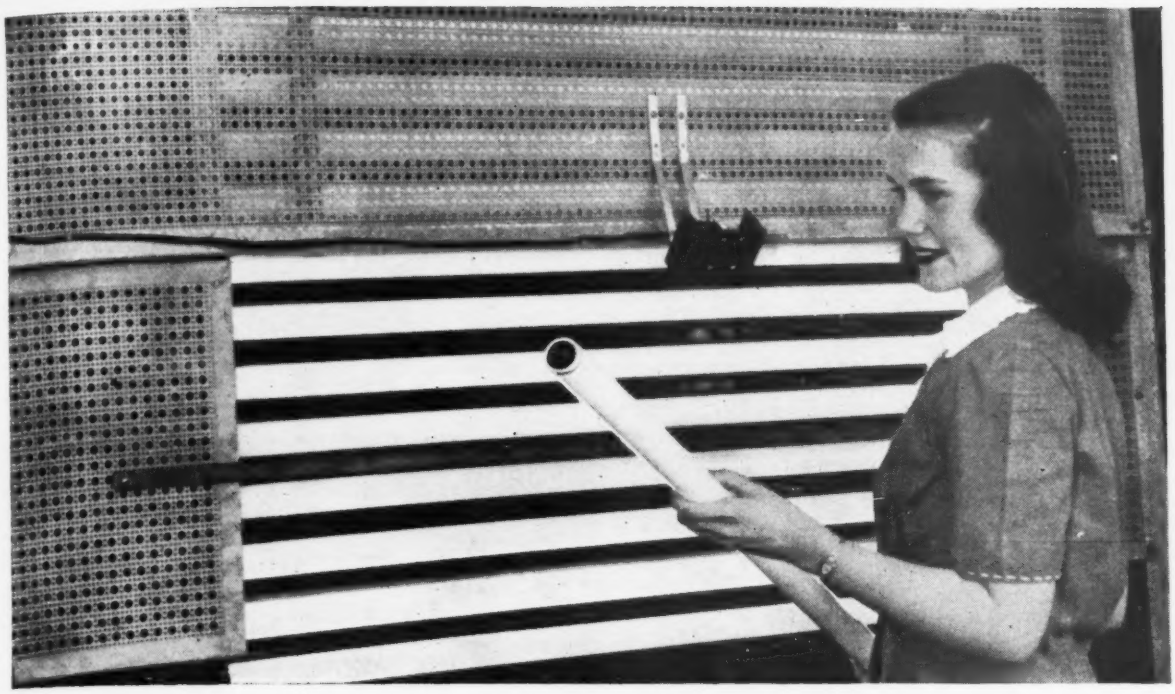
SINGLE PHASE, 50 OR 60 CYCLE—2200 TO 110/220 VOLTS
3—1 K. V. A. Westinghouse
3—1½ K. V. A. Westinghouse
2—2 K. V. A. Westinghouse
4—3 K. V. A. Westinghouse
4—5 K. V. A. Westinghouse
3—10 K. V. A. General Electric

SINGLE PHASE, 50 OR 60 CYCLE—2200 TO 440/220 VOLTS
1—7½ K. V. A. Westinghouse
3—10 K. V. A. General Electric

SINGLE PHASE, 50 OR 60 CYCLE—440 TO 220/110 VOLTS
4—1½ K. V. A. Westinghouse
8—3 K. V. A. Westinghouse
2—5 K. V. A. Westinghouse
4—7½ K. V. A. Westinghouse
3—10 K. V. A. Westinghouse
2—150 K. V. A. General Electric

We Design - Build - Repair

JEFFRIES TRANSFORMER CO.
1710 E. 57th St., Los Angeles, Calif.



AGE BEFORE DUTY..

• When properly "aged" or seasoned, fluorescent lamps remain more constant than daylight throughout their entire life. This is important in lamps that illuminate precision work in war plants.

At Sylvania there is a special "age before duty" machine that lights and relights fluorescent lamps for carefully regulated time intervals. This mellowing process prepares all the elements that make up a lamp for a life of uniform light output. It is also a final precaution taken to weed out an occasional substandard lamp which may have filtered through dozens of painstaking inspections.

That is why a Sylvania Fluorescent Lamp can be counted on for consistent light output every minute of its life.

"Aging" is one of many Sylvania methods of safeguarding fluorescent quality. Lamp efficiency is perfected and maintained at its highest peak through continual research by Sylvania engineers who have years of specialized experience with incandescent lamps, radio tubes, ultra-violet lamps and other electronic devices.

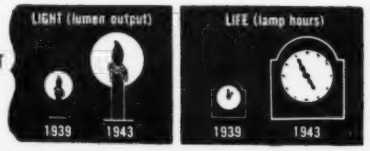
Today Sylvania's research is providing the best and most economical lighting known for war industry. When victory is won, the same independent research will bring the advantages of fluorescent lighting to postwar homes.

For more light output, longer life and uniform color, specify Sylvania Fluorescent Lamps in new installations and replacements.

FAR MORE LIGHT AND LIFE FOR YOUR MONEY

Compared with 1939, a dollar invested today in Sylvania Fluorescent Lamps buys more than four times the lumen output and approximately five times the lamp life.

SYLVANIA FLUORESCENT DOLLAR BUYS:



(Based on decreasing price and increasing efficiency and durability of Sylvania 40-Watt White Fluorescent Lamp)

Even on existing circuits, a change-over to fluorescent—Sylvania Lamps, Fixtures and Accessories—will probably more than double the light you get for the same wattage.

SYLVANIA

ELECTRIC PRODUCTS INC.

Formerly Hygrade Sylvania Corporation

Salem, Mass.

INCANDESCENT LAMPS, FLUORESCENT LAMPS, FIXTURES AND ACCESSORIES, RADIO TUBES, CATHODE RAY TUBES, ELECTRONIC DEVICES

WESTERN MARKETERS AND MARKETING

A monthly column devoted to the promotional and advertising plans of western manufacturers

Western industrial executives interested in the marketing of their products will find the following comparative table of gross sales, selling expense and advertising cost of reference value. It is from a national survey of industrial advertising budgets compiled by the National Industrial Advertisers Association. It covers a five-year average from 1937 to 1941.

Annual Sales Volume	Percent of gross sales spent for selling	Percent of gross sales spent for advertising
Less than $200,000	15.91	4.04
$200,000-$500,000	13.92	3.00
$500,000-$1,000,000	11.68	2.54
$1,000,000-$2,000,000	11.31	2.10
$2,000,000-$5,000,000	11.82	1.94
Over $50,000,000*	10.67	1.34
No size classification	11.85	1.84
TOTAL	12.36	2.29

*Intermediate figures between $5,000,000 and $50,000,000 not obtainable for five-year period.

Following newspaper releases that it will cease manufacture of General Sherman tanks after January 1, 1944, the *Pacific Car and Foundry Co.,* Renton, Wn., embarks on new advertising campaign. Institutional for the present, schedules will be placed by Erwin-Wasey Co., Seattle, Warren Kraft, account executive.

Isaacson Iron Works, Seattle, appoints *Ad-Craft Service* as advertising agency. V. O. Rockett, account executive.

Another post-war marketer is *Pointer-Willamette Co.,* Portland. Announcing appointment of *Mac Wilkins, Cole & Weber* as agency, company will release campaign directed toward lumber industry. Mac Wilkins, account executive.

Spencer W. Curtiss, Inc., has opened new San Francisco offices in the Mills Tower. The firm, which has long specialized in industrial advertising, also maintains offices in Chicago and Indianapolis. Curtiss has recently published a significant new book *The Hope of Industry,* discussing post war sales planning and merchandising.

R. H. (Rusty) Burke, late staff member of Strang & Prosser, Seattle, joins *Mac Wilkins, Cole & Weber,* same city. Will handle Henry Mill & Timber Co. account.

Eugene Schnell joins staff of *J. D. Christian,* San Francisco, as advertising manager. Company reported readying advertising campaign to promote post-war sales.

Gardiner Mfg. Co., Oakland, releases first ads of new series through its newly appointed agency, *Garfield & Guild,* San Francisco. Richard Berggren will service the account.

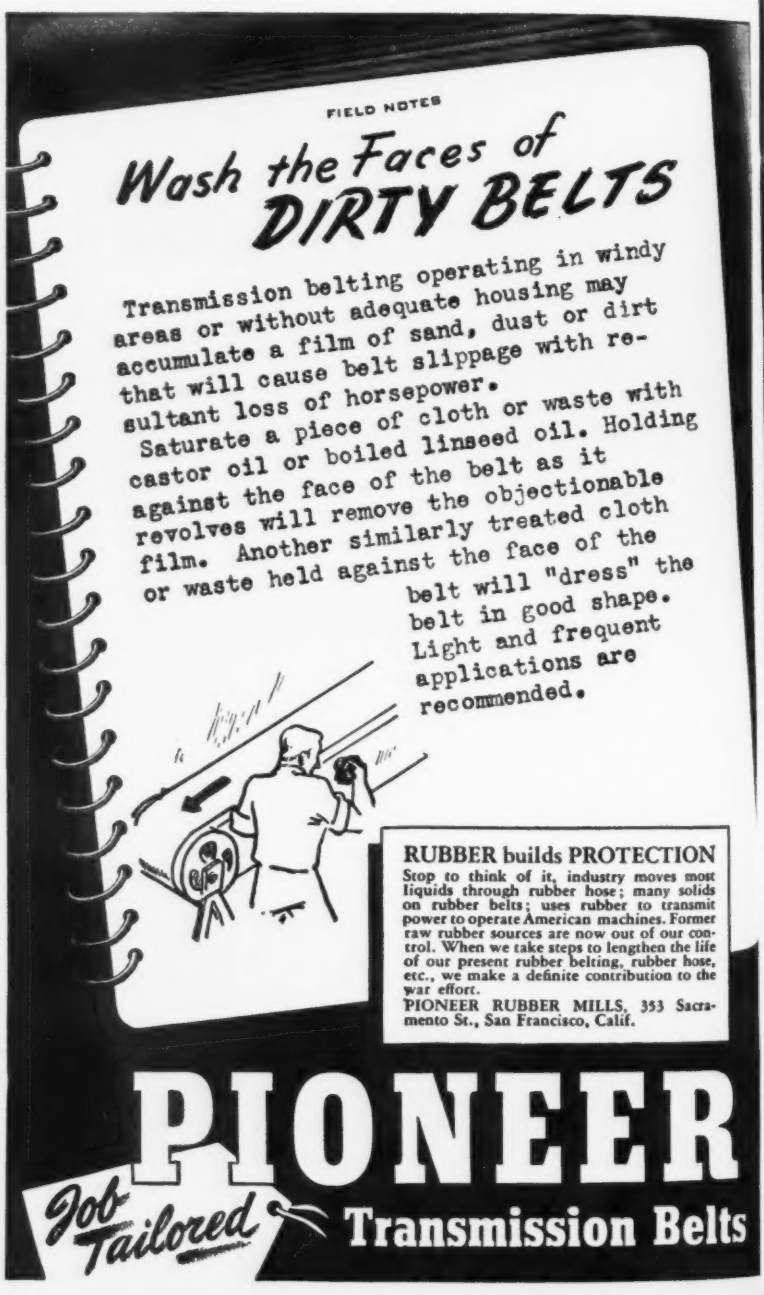
William Horsley, *Pacific National Agency,* Seattle, announces appointment of W. D. Humphreys to head up agency's expanding industrial division.

According to statistics released by *Industrial Marketing, The McCarty Co.,* with head office in Los Angeles, led all western industrial agencies in 1941-42, in space placed with business papers.

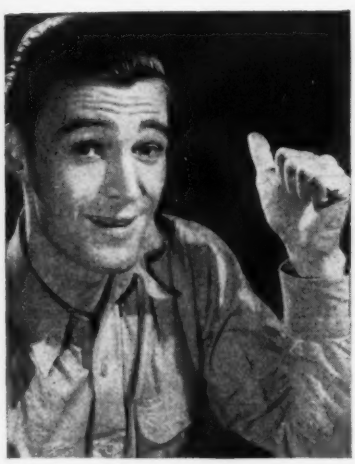
Calvin D. Wood, long associated with the industrial publishing and advertising field in the west, has been appointed manager of the San Francisco office of *West-Marquis, Inc.,* whose home office is in Los Angeles. Prior to his affiliation with West-Marquis, Mr. Wood was media director of *Buchanan & Co.,* (Los Angeles office).

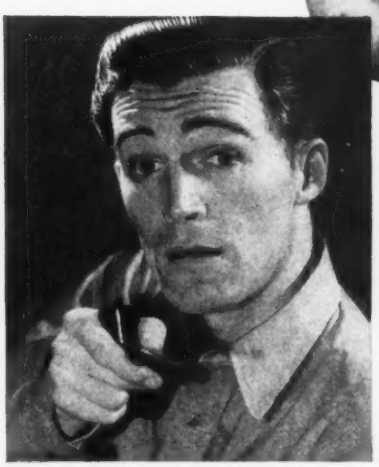
Paraffine Companies, Inc., through its agency, *Brisacher, Davis & Van Norden,* resumes trade journal campaign featuring its Hydroseal roof repair plastic and Paracoweb.

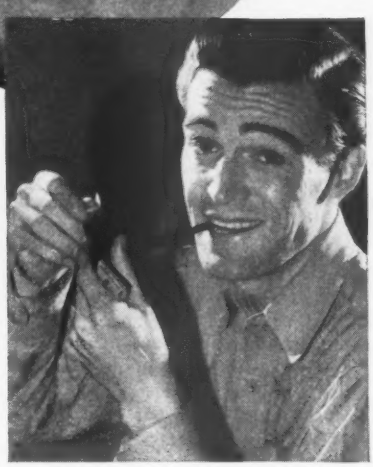
Introducing its new portable generator to the western market, *Electrical-Products Consolidated,* Seattle, initiates advertising campaign directed toward construction and general industrial field. *Erwin-Wasey Co.* handling with Warren Kraft, account executive.


FIELD NOTES
Wash the Faces of DIRTY BELTS
Transmission belting operating in windy areas or without adequate housing may accumulate a film of sand, dust or dirt that will cause belt slippage with resultant loss of horsepower.
Saturate a piece of cloth or waste with castor oil or boiled linseed oil. Holding against the face of the belt as it revolves will remove the objectionable film. Another similarly treated cloth or waste held against the face of the belt will "dress" the belt in good shape. Light and frequent applications are recommended.
RUBBER builds PROTECTION
Stop to think of it, industry moves most liquids through rubber hose; many solids on rubber belts; uses rubber to transmit power to operate American machines. Former raw rubber sources are now out of our control. When we take steps to lengthen the life of our present rubber belting, rubber hose, etc., we make a definite contribution to the war effort.
PIONEER RUBBER MILLS, 353 Sacramento St., San Francisco, Calif.
PIONEER
Job Tailored
Transmission Belts

LUBRICATE AND CLEAN GEARS IN ONE OPERATION!







1 GEARITE, Union Oil Company's outstanding gear grease, *is a lubricant in a solvent!* When applied, the solvent in Gearite washes off old deposits of grease and dirt—evaporates—and leaves just the right amount of new grease on the gear teeth. It cleans and lubricates all in one operation!

2 Application of Gearite is simple because you don't have to heat it. It can be applied by spray gun, by the drip-cup method, by brush, or by direct pouring. And you don't have to worry about even distribution. The solvent in Gearite carries the lubricant to every tooth, every working surface.

3 And that isn't all. Gearite is far cleaner than most gear lubricants because it forms only a thin layer of grease. It doesn't collect dirt. It won't throw off. It's tacky, will not become brittle or flake off gear teeth during idleness.

4 See for yourself how Gearite works. You can get a supply of this outstanding lubricant by simply calling your Union Oil Resident Manager . . . today!

TAKE THIS TIP! When you buy petroleum products buy enough to last. It will protect you against transportation tie-ups and will insure you of an adequate supply of the products you need.

OIL IS AMMUNITION—USE IT WISELY!

GEARITE

an industrial product of

UNION OIL CO.

OTHER SERVICE-PROVED UNION OIL PRODUCTS

PURE PENN WORM GEAR LUBRICANT—Outstanding for all types of worm gears, particularly under heavy duty conditions. Extremely stable, cuts wear to a minimum.

EBONCUP GREASES—Union's Eboncup Greases have excellent heat and water resistant qualities. They do a top job in protecting ball bearings against wear.

STOP-RUST B—The best internal rust-preventive you can buy. Clings to metal surfaces so well it won't drain off for months. Effectively prevents rust.

LABOR
AND THE INDUSTRIAL WEST

Boeing Wage Increase Granted

WLB has authorized substantial wage increases for Boeing Aircraft workers, justifying them as "rare and unusual" cases, with the avowed purpose of boosting the output of Flying Fortresses. Workers affected are employed in Boeing plants at Seattle and Renton, Washington.

A lowest paid classification of 82½ cents an hour, which formerly was paid after 90 days' employment, was authorized. The contract hiring rate of 67 cents hourly was ordered abolished and new employees may be hired at the regular grade rate. The rate for top mechanics was increased from $1.47½ to $1.60 hourly. Premium rates paid for the second and third shifts were raised from 5 cents an hour to 10 cents an hour. The board approved increases retroactive to March 3, and it is estimated that approximately 75 per cent of the workers will get some increase.

The Boeing management believes the new wage structure will eliminate the differential in pay between aircraft work and other war industries in the Seattle area, which "has been an obstacle in obtaining the additional manpower needed to meet the increased schedules for production of the Boeing Flying Fortresses."

Shipyard Economy

Seventy million dollars a year, at least, will be saved in building and repairing ships of supply for American armed forces because of conclusions reached at the Pacific Coast Shipbuilding Stabilization Conference at San Francisco, and about fifty million man hours per year will be gained and translated into greater speed and efficiency. However more workers, not less, probably will be needed to keep up with the program laid down by President Roosevelt.

The three-shift, eight-hour day was made standard in the more than seventy yards on the West Coast building or repairing for the Army, Navy, Maritime Commission and War Shipping Administration, as a result of this conference.

Another decision resulting from the conference was that the NWLB ruled that workers in San Francisco Bay Area ship repair yards are entitled to pay for a lunch period when their straight-time shift is extended into extra time.

Study Those Long Term Agreements

"Under the pressure of the times," says a bulletin of the Merchants and Manufacturers Association of Los Angeles, "many employers are disinclined to give careful enough attention in considering suggested clauses in collective bargaining agreements. This is not only true where a negotiation is under way for the first time, but also where the renewal of an existing contract is involved.

"Organized labor leadership, fully aware of existing pressure, is asking for insertion in contracts of various clauses which are innocent in the light of present conditions, but which may prove to be a serious handicap to sound employer-employee relations in the post-war period of adjustment.

"Many contracts are now being renewed for a definite period of two, three or five years. It would seem ill-advised for employers to enter into contracts governing employment policies which will carry over into a post-war adjustment period where conditions will have to be met as they arise. Employers may find themselves bound by contracts which would be difficult of adjustment to meet then existing conditions.

"Frequently phrases or clauses are lifted bodily from the text of various government regulations which are, in many instances, interpretations or directives based on executive orders and are not law. They are issued in connection with the administration of *emergency* agencies in the war period.

"Contracts hastily agreed to under the pressure and stress of war production may prove to be wholly untenable and impossible of operation after the war."

Colorado Labor Law Held Constitutional

The Denver district court has ruled that all of the Colorado labor peace act was constitutional except two sections which require the incorporation of all labor unions in the state. The ruling was in a suit brought by the CIO and AFL to restrain enforcement of the act which was passed by the Colorado legislature last Spring.

The act provides for close supervision of labor affairs by the State Industrial Commission, prohibits arbitrary or excessive dues, states that members may demand financial reports, outlaws the secondary boycott and the "sit-down" strike and gives the commission power to supervise picketing "when it endangers public peace or property."

Aircraft Labor Again Deferred

An additional 60-day extension of deferments for aircraft production workers in California and Washington has been announced. This extension will provide time for aircraft plants to file new replacement schedules with the Selective Service directors of the two states.

The original 60-day stays of induction for individual workers who were certified by their employers as irreplacable expired October 1.

MORE SCRAP IRON—An abandoned mining dredge, salvaged in Boise River Section after 30 years of idleness, represents 150 tons of cast iron and steel.

NOW'S THE TIME TO DRIVE FOR WAR BOND SALES

AS YOU NEVER DROVE BEFORE!

Many a soldier owes his life to a commander who drove him to the utmost in battle—*never let him slacken for a single fatal instant!* And after the war, many a worker will owe his economic safety to a leader who drove him continuously for higher Pay-Roll allotments for the purchase of War Bonds!

Despite higher taxes and prices, the average worker still has more money than ever before—particularly on the basis of the *family* income. With others in the family earning, too, just let the worker 'figure it out for himself', and he usually will realize that *now* he can put more into War Bonds than he has been doing.

That's why the Treasury Department has set new quotas for the current Pay-Roll Allotment Drive—*quotas running about 50% above former figures.* These quotas are designed to reach the *new* money that's coming into the family income. Coming from millions of new workers . . . from women who never worked before . . . from millions who never before earned anything like what they are getting today!

The current War Bond effort is built around the *family* unit, and the Treasury Department now urges you to organize your War Bond *thinking*—and your War Bond *selling*—on the basis of your employees' *family* incomes. For details, get in touch with your local War Finance Committee which will supply you with all necessary material for the proper presentation of the new plan to your workers through your labor-management committees.

Today about 30,000,000 wage earners, in 175,000 plants, are buying War Bonds at the rate of nearly half a billion dollars a month. Great as this sum is, *it is not enough!* So turn-to today! Get this new *family income plan working!*

This Space Is a Contribution to America's All-Out War Effort By

WESTERN INDUSTRY

Wages Under 40 Cents May Be Boosted

Employers in Washington, Oregon, Colorado, Utah, Idaho, New Mexico, Wyoming and Montana have been authorized to eliminate substandard wages by raising rates to 40 cents an hour without WLB approval, even though the employer might seek to use the wage increase as a basis for price relief. This blanket provision is permissive, rather than mandatory.

Previously employers were permitted to raise wages to 40 cents an hour without Board approval only if they did not intend to use the increase as a basis for seeking increases in price ceilings or resisting justified reductions in prices.

WLB Adds to Powers

Jurisdiction over labor cases involving concerns identified with practically all phases of the aircraft industry have been taken over by the NWLB in Washington. In line with a program aimed at "stabilizing the airframe industry on a national basis" it is to handle all labor dispute cases involving manufacturers of airframes, subassemblies and of major parts of both planes and gliders.

44-Hour Order To Garment Trade

Shift of Southern California's large garment industry to a minimum mandatory work week of at least 44 hours has been ordered by WMC. However, modifications are to be granted for departments where it is shown that this shift is not feasible because of production schedules. Some 8000 garment workers and some 700 workers in the shoe industry are affected by this decision.

1942 Industrial Accidents

The Industrial Accident Commission received reports of approximately a half million industrial accidents in 1942 of which 131,615 resulted in disabling injuries, that is injuries so severe as to prevent the injured from returning to work the day following the accident. This is the largest number for any year and represents an increase of 15.8 per cent above the 113,648 disabling injuries reported in 1941. The total number of fatal injuries, however, increased less than 6 per cent between 1941 and 1942, despite an unprecedented rise in employment during this period; accidents resulting in permanent disability increased 31 per cent.

Chinese Aircraft Company

Several hundred American Chinese recruited from Los Angeles and San Francisco will man a new aircraft plant to be built in Southern California, operated as China Aircraft, Inc. Douglas Aircraft will train the Chinese workmen at the main Douglas plant in Santa Monica and help organize the new company.

Additional Jobs For Women

Women have been employed by the Bunker Hill and Sullivan Mining and Smelting Company of Idaho in their above-ground plants, and may eventually operate motor cars in the underground workings.

In Utah plans are under way to employ more women in smelting and milling work. Some are now employed at the Tooele smelter and at the powder manufacturing plants at Bacchus and Spanish Fork. This was possible after the state legislature suspended the state law barring women from employment in mills and smelters for the duration.

Schools Linked To War Effort

Two contracts which tie the school system at Long Beach, California, into war production have been approved by the Board of Education. One will enable 4000 16 and 17 year old students in junior and senior high schools to work split shifts at the Douglas Aircraft plant after school. Students will work four hours a day six days a week and attend school four hours a day five days a week.

In another contract the school system will educate apprentices seeking various trades in conjunction with the dry dock division of Roosevelt Base.

Unions Certified For Copper Workers

As a result of elections NLRB has certified three unions as collective bargaining agents for various groups of employees of the Utah Copper Company and Kennecott Copper Corporation, Bingham Canyon, Utah, as follows:

The International Association of Machinists, lodge No. 568, district 114, for hammer operators, blacksmiths, tool dressers, including student employees but excluding foremen and supervisors.

The International Brotherhood of Electrical Workers, local 1081 (AFL) for X-ray technicians, armature winders, electricians and student employees, excluding bosses, foremen and supervisors.

The International Union of Mine, Mill and Smelter Workers for a majority of remaining production and maintenance employees, including axemen of the engineering department, student employees, toe samplers, assayers helpers, and precipitation plant operators.

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Fight WITH WAR BONDS

Among Labor Personnel

Donald H. Cheeseman has been awarded $500 because he suggested a device for use in inspection of bolts at the Lockheed Aircraft Corporation Plant. . . . Daniel Jones, chipper at Kaiser's Vancouver shipyard, spent what he declared to be his 100th birthday anniversary working as usual. . . . D. T. Kinslow of Los Angeles Shipbuilding and Dry Dock Corp. was presented with a War Bond in ceremonies at the yard, in recognition of an act of heroism which saved the life of a fellow employee. The worker attempted to leave a ship by means of a rope which broke and the worker toppled into the water, striking his head on a fender log. He would have drowned had not Kinslow dived into the water and hoisted him to the wharf. . . . In an all-shipyard wedding at Consolidated Steel Corporation, Wilmington, California, Beverly Busgen, welder and Darrell Maluy, leaderman, were married during midnight lunch time by another shipbuilder, the Rev. Ray Pool.

Changes in Job Stabilization Rules

The following changes in job stabilization rules in Colorado, Wyoming, Utah, Montana, and Idaho, according to J. R. McCusker, regional director of WMC, should go into effect by October 15 to meet minimum requirements set up by the national industry-labor-WMC director committee:

1. Persons who possess any of the 149 critical skills may be hired only after referral to employers by WMC's United States employment service or by special arrangement with the WMC.
2. Workers desiring to leave agricultural work for more than off-season temporary periods may be hired only upon referral by the USES and approval of a war food administration representative.
3. Workers who change jobs without a certificate of availability must wait sixty days instead of the present thirty days. During the period they will be considered in the status of idleness—subject to draft.
4. Certificates of availability to be issued by the USES upon request to any worker in any establishment who is being paid substandard wages.

Must Have Approval First

Although wage rate brackets of "sound and tested going rates" for various occupations in the San Francisco Bay Area have been established by the 10th RWLB, "it is important that employers and employees note however, that establishment of wage rate brackets does not give employers the right to increase wages without first obtaining approval of the RWLB" it was explained by A. C. Miller, vice chairman of RWLB.

Coal Miners Get 48-Hour Week

Colorado and Utah coal mines have been authorized to operate the mines on an eight hour day, 48-hour week basis.

This action will give the coal miner an extra $9 a week in pay at a time and a half rate of $1.50 hourly for the additional six hours' work. Under Ickes' supervision the mines have been working six seven-hour days weekly, with time and a half pay for the sixth day.

Awards in Production Suggestions

Suggestions from shipyards located in the San Francisco Bay area will save not only critical materials, but also approximately 7,847 manhours per ship, according to War Production Drive Headquarters, who will present awards to 41 shipyard workers.

Among the winners is Mrs. Maude Knight, a burner at Richmond No. 1 yard, who is the first woman west of the Mississippi to merit a certificate in the judgment of the national awards jury. She suggested a burning table which doubles the production of strongbacks and can be easily operated by the fair sex.

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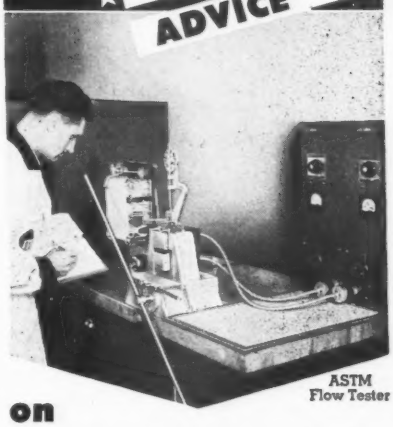

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THE WEST ON ITS WAY

ARIZONA

SCHOOL ADDITIONS—M. W. Bobo, Phoenix, has been awarded contract by Phoenix School District for construction of additions to three school buildings in Phoenix, Ariz., to cost about $70,000.

RECREATION FACILITIES—Jacobson Const. Co., Salt Lake City, has been awarded contract by U. S. Dist. Engineer Office for construction of recreation facilities at Fort Douglas, Ariz.

BUILDING REPAIRS—Fred D. Kyle, Los Angeles, has been awarded contract by the U. S. Dist. Engineer Area Office, Phoenix, for repairs to building at an air field in Cochise County, Ariz., to cost less than $50,000.

WAC HOUSING FACILITIES—Gilbert E. Olson, Phoenix, has been awarded contract by U. S. Dist. Engineer Area Office, Phoenix, for construction of housing facilities for WACs at a fort in Cochise County, Ariz., to cost less than $50,000.

CALIFORNIA

HOUSING—Coast Counties Const. Co., Salinas, Calif., has been awarded contract by U. S. Army Engineer Office, San Francisco, for construction of housing in Central California.

BUILDING—P. A. Weeger, Los Angeles, has been awarded contract by U. S. Dist. Engineer Office, Los Angeles, for construction of flight surgeons' building at Long Beach, Calif.

AIR BASE CONSTRUCTION—Albert Reingardt, Long Beach, has been awarded contract by U. S. Dist. Engineer Area Office for additional construction at an army air base in Kern County, Calif., to cost more than $50,000.

HOUSING FACILITIES—Joshua Marks-Charde Co., Los Angeles, has been awarded contract for group of barracks buildings and other housing facilities near San Diego for the U. S. Navy, to cost less than $500,000.

BUILDING—E. P. Dentzel, Beverly Hills, and Geo. H. Whyte, Jr., Alhambra, Calif., have been awarded contract by U. S. Dist. Engineer Office, Los Angeles, for construction of library building and utilities at an army air base in Santa Barbara County, Calif., to cost less than $50,000.

TANKER FLEET—A new company, Los Angeles Tanker Operators, Inc., has applied for recognition as general agent for the War Shipping Administration in the operation of ships now under construction. The fleet of tankers will be operated by a company owned by Los Angeles citizens, to take oil from Southern California to all parts of the world.

EQUIPMENT—The Corona Clipper Co. has purchased and moved the equipment of the Hawley Mfg. Co., San Francisco, including dies, jigs, etc., to the Corona plant.

PLANT—Monadnock Mills have received approval for establishment of a new factory in San Leandro, Calif.

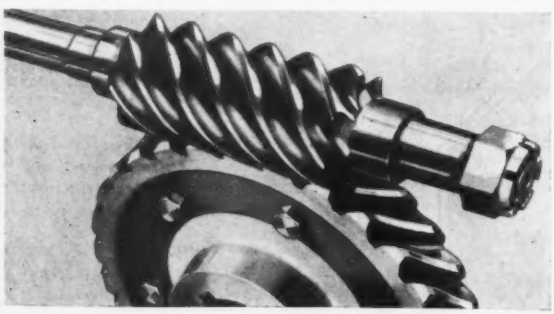
SIGNAL SYSTEM—WPT has granted the Western Pacific Railroad authority to proceed with installation of complete centralized traffic control signal system through the 118-mile Feather River Canyon, to cost about $1,300,000.

WAC HOUSING—Royal Building Corp., Lynwood, Calif., has been awarded contract by U. S. Dist. Engineer Area Office for construction of housing for WACs at Camp Haan, Calif., to cost between $90,000 and $100,000.

BUILDING—J. N. Robinson, San Bernardino, has been awarded contract by U. S. Dist. Engineer Area Office for construction of radar repair building at an air depot in San Bernardino County, Calif., to cost less than $50,000.

CARPENTER SHOP—Empire Const. Co., Ltd., San Francisco, has been awarded contract by U. S. Army Engineer Office for construction of a carpenter shop in the San Francisco North Bay area.

FACILITIES—Brunzell Const. Co., 3104 Greenfield Ave. West, Los Angeles, has been awarded $233,682 contract by Navy Dept. for construction of women's reserve facilities at El Centro, Calif.



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LABORATORY—Aero Magnetic Laboratories has been formed by P. A. Robinson and business will be established at 4870 Santa Monica Blvd., Los Angeles.

FACTORY ADDITION—Pittsburgh Equitable Meter Co., Merlo-Nordstrom Div., 2431 Peralta St., Oakland, Calif., has let contract for factory addition to Christensen & Lyons, 3454 Harland St., San Francisco, for factory addition to cost $40,000.

GASOLINE AND OIL DRUMS—Northwestern Barrel Co. of South Milwaukee, Wis., has leased the Brown warehouse in Pleasanton, Calif., and installed machinery to clean, recondition and rebuild gasoline and oil drums for the government.

REFINERY ADDITIONS—Refinery additions costing nearly $400,000 have been started by the Texas Co. and Union Oil Co. in Wilmington, Calif.

CONSTRUCTION—Allison Honer, Santa Ana, Calif., has been awarded contract by the U. S. Dist. Engineer Area Office, San Bernardino, Calif., for construction at Camp Haan, Calif.

BUILDINGS—Baruch Corp., Los Angeles, has been awarded $54,135 contract by U. S. Navy Public Works Office for construction of two buildings for repair and maintenance of ordnance facilities at Camp Elliott, Calif.

WAREHOUSE ADDITIONS—Whalin Bros., Oakland, Calif., have been awarded contract by U. S. Engineer Office, San Francisco, for alterations and additions to warehouse in San Francisco Bay area.

CONSTRUCTION—Mead & O'Donnell, Los Angeles, have been awarded contract by U. S. Dist. Engineer Area Office, San Bernardino, for construction at an air depot in San Bernardino, Calif.

DWELLING UNITS—Matthew A. Little Co., San Francisco, has been awarded $85,500 contract by Housing Authority of Riverbank for construction of 40 family dwelling units, Riverbank, Calif.

EMPLOYEES' CAFETERIA—Menasco Mfg. Co., 805 S. San Fernando Road, Burbank, has constructed employees' cafeteria, equipped to serve 180 people.

LIVING UNITS—California Bldrs. Co., Inc., Oakland, has been awarded contract by Home Owners Loan Corp., San Francisco, for conversion of residence into living units for war workers, Alameda, Calif.

BUILDING—O. L. Carpenter, San Diego, has been awarded $125,625 contract by Federal Public Housing Authority, San Diego, for construction of building at Linda Vista housing project, San Diego, Calif.

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Standardization to Larger Carboys

In accordance with a nation-wide plan for the standardization of containers in the chemical industry as sponsored by the Manufacturing Chemists Association of the United States, Stauffer Chemical Company recently announced the introduction of the new 13-gallon carboy for packaging acids on the Pacific Coast. They plan a gradual change-over from the present 12-gallon size to the new standard 13-gallon carboy and at this writing are packaging all Muriatic Acid in the Southern California area in their larger carboys, while in Northern California and the Pacific Northwest they are using them for Sulphuric Acid, and within a very short time Nitric Acid.

The Company announces the following net weights for the 13-gallon carboy:

Muriatic Acid—20° Be'., Commercial	128 lbs. net weight
Sulphuric Acid—66° Be'., Commercial or Water Shite	200 lbs. " "
Electrolyte 1.835 Sp. Gr. (Battery Acid)	200 lbs. " "
Electrolyte 1.400 Sp. Gr. " "	152 lbs. " "
Electrolyte 1.260 Sp. Gr. " "	140 lbs. " "
Nitric Acid—38° Be'	146 lbs. " "
" " —40° Be'	148 lbs. " "
" " —42° Be'	150 lbs. " "

These weights, it is believed, will be standard for this size package for all commercial acids sold on the Pacific Coast. As more 13-gallon carboys become available, they will be gradually substituted for the present 12-gallon size until, eventually, all commercial acids will be marketed in the new package.

"Potentially Dangerous"

Last week a workman in a San Francisco Bay acid plant was seriously burned while handling a supposedly empty carboy. We know that the acid manufacturers have gone out of their way to preach to the public that containers should be thoroughly drained of their contents before they are returned to the manufacturer for refilling. This applies not only to acid carboys or drums but also to solvent drums and to other containers holding inflammable, corrosive or otherwise dangerous contents. Of course, it especially applies to carboy bottles which are cumbersome to handle and are quite often stored on their sides. They have no stoppers and therefore if there is a small amount of liquid still in the container it is very likely to spill when the truck driver or the receiving clerk takes hold of the neck of the bottle to move it. Every one of us would feel badly if we knew we had contributed to blinding or disabling some unsuspecting workman by being careless enough to leave a small quantity of acid in a returning container.

Sulphuric Acid Allocation

Some months ago we told you that the machinery had been set up for allocating Sulphuric Acid although no definite action was taken at that time.

Several weeks ago the War Production Board began directing the distribution of tank cars of some types of Sulphuric Acid to certain industries. Gradually, it will instruct those industries capable of using reconditioned acid to do so in order to release greater amounts of fresh acid to more critical industries.

If you believe there is any possibility that your present use of fresh Sulphuric Acid in tank cars may not be considered critical by the War Production Board, we would suggest that you contact your acid supplier regarding the possibility of switching to reconditioned acid. Samples can be offered for laboratory experiment in order to determine if this type of acid would be applicable in your process.

Your Chemical Reporter will bring you helpful chemical information each month through the courtesy of Stauffer Chemical Company, San Francisco, Los Angeles and North Portland.

THE WEST ON ITS WAY

PLANT ADDITIONS—Union Oil Company, 617 W. 7th St., Los Angeles, Calif., will expend about $425,000 to build several refinery buildings and other additions.

DEHYDRATING PLANT—Vegetable dehydration plant, Santa Ana, Calif., for Compak Foods, Inc., to contain about 50,000 sq. ft. of floor space.

HOUSING—De Luca & Son, San Francisco, have been awarded contract by U. S. Army Engineer Office for construction of housing in the San Francisco area.

DWELLINGS—M. J. Brock & Sons, Inc., Los Angeles, have been awarded contract to build dwellings in Hawthorne and Santa Monica, for Imperial Homes, Inc., to cost $700,000.

NURSERY SCHOOLS—Operation of four nursery schools and one child care center for children of working parents has been approved for Burbank, Calif.

FIRE STATION—Lewis Const. Co., Oakland, has been awarded contract by U. S. Army Engineer Office for construction of a fire station in the San Francisco Bay area.

HANGAR BUILDING—Barrett & Hilp, San Francisco, have been awarded $426,391 contract by Navy Department for construction of hangar building at Mills Field, Calif.

BUILDING—W. D. Haxton, San Diego, has been awarded contract by U. S. Navy, San Diego, for construction of recreation building and facilities at Ream auxiliary air field near San Diego, Calif.

WAREHOUSE—G. A. Bell Eng. Co., Los Angeles, has been awarded contract by U. S. Navy for construction of warehouse at Roosevelt Base, Wilmington, Calif., to cost $1,000,000.

MACHINE SHOP ADDITION—Noel M. Calhoun, Los Angeles, has been awarded contract by Western Pipe & Steel Co., San Pedro, for altering and adding to machine shop building No. 1 at San Pedro, to cost about $50,000.

SCHOOL—Southwest Const. Co., Los Angeles, has been awarded contract by Federal Public Housing Authority, San Diego, for construction of two grammar schools at Chula Vista, Calif.

FACILITIES—Jas. I. Barnes Const. Co., Santa Monica, has been awarded $197,955 contract by Navy Dept. for construction of marine women's facilities at El Toro, Calif.

MARKET BUILDINGS—Kemp Bros., Los Angeles, have been awarded contract by Federal Public Housing Authority for construction of five small market buildings in connection with the housing projects in San Diego, Calif.

SHOP—Scherer & Prichard, Redlands, Calif., have been awarded contract by U. S. Dist. Engineer Area Office for construction of post exchange and sheet metal shop at a camp in Riverside County, Calif.

PLANT FACILITIES—Cutter Laboratories, Inc., Berkeley, Calif., has been granted $600,000 DPC loan to provide plant facilities in California.

CHILD-CARE CENTERS—President Roosevelt has approved additional 50 child-care centers for 5000 children whose mothers are working in Los Angeles County, Calif.

COLORADO

AIR DEPOT—Thomas Bate & Sons have been issued a $996,360 building permit for construction of buildings at the new Denver airplane modification depot at 3600 Syracuse St., Denver.

COKE OVENS—Colorado Fuel & Iron Corp., Denver, has planned construction of 74 coke ovens at its Minnequa steel plant.

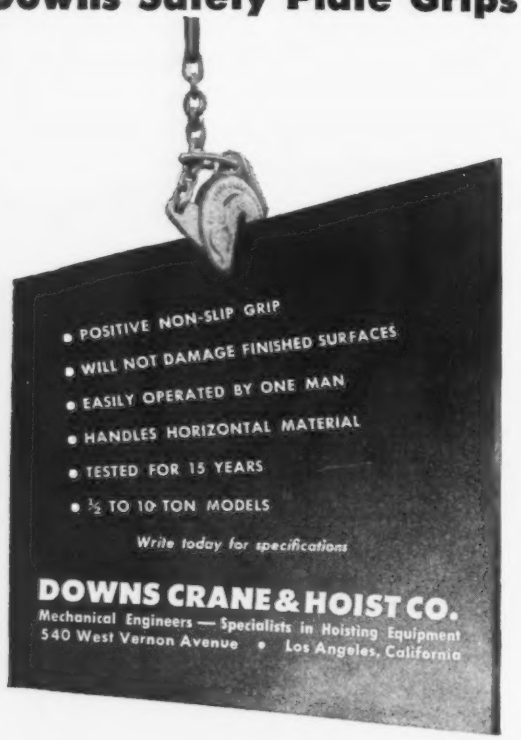
BUILDINGS—Jas. B. Kenney, Denver, has been awarded contract by U. S. Dist. Engineer Office, for construction of buildings and utilities for 2nd Aid Force Command, El Paso County, Colo.

DRAIN TUNNEL—$1,500,000 appropriation for driving new Leadville drain tunnel has been approved.

PLANT—800-ton sink and float plant has been completed by the Ore and Chemical Company to treat dump ore from the Leadville, Colo., district.

ADMINISTRATION AND COMMUNITY BUILDING—Mead & Mount Const. Company, Denver, has been awarded contract by Federal Public Housing Authority for construction of an administration and community building near La Junta, Colo.

Downs Safety Plate Grips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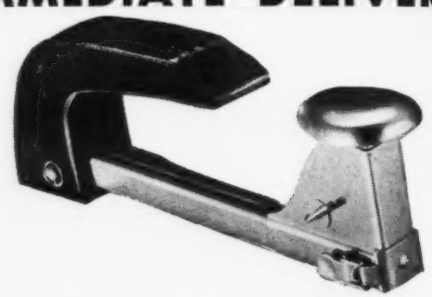

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HOSPITAL BUILDINGS—Robert Morris, Denver, has been awarded contract by U. S. Engineer Office, Denver, for construction of additional hospital buildings and utilities at Denver, Colo., to cost about $100,000.

IDAHO

BUILDINGS—Jerry Nottingham, Boise, Idaho, has been awarded contract by U. S. Dist. Engineer Office, Portland, for construction of temporary frame buildings in Ada County, Idaho, to cost less than $50,000.

HOUSING—Sound Const. & Eng. Co. and Peter Kiewit & Sons, Seattle, have been awarded $616,694 contract by the Navy Dept. for construction of low-cost defense housing naval training station at Farragut, Idaho.

MONTANA

HOSPITAL FACILITIES—Dudley Anderson Co., Great Falls, has been awarded contract by U. S. Army Engineers for hospital facilities in Cascade County, Montana, to cost between $100,000 and $500,000.

AIR FORCES INSTALLATION—S. Birch & Sons Const. Co. and J. L. McLaughlin, Great Falls, Mont., have been awarded contract in excess of $1,000,000 for construction of Army Air Forces installation in Cascade County, Montana.

WAREHOUSES—U. S. Dist. Eng. Office, Seattle, has authorized construction of two warehouses at an army camp in Lewis and Clark County, Montana.

NEVADA

BUILDINGS—Guy E. Hall, Bakersfield, Calif., has been awarded contract by the U. S. Engineer Office, Sacramento, for construction of buildings in Nye County, Nevada, to cost between $100,000 and $500,000.

SCHOOL—Cal-Nada Const. Co., Reno, Nev., have been awarded $63,950 contract by Federal Works Agency for construction of temporary school building at Hawthorne, Nev.

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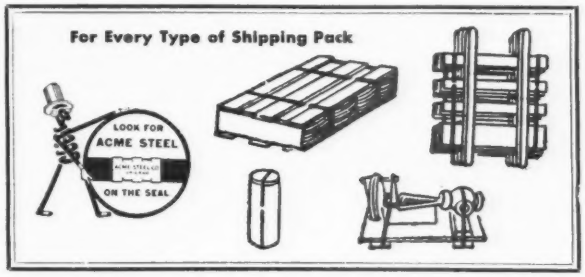

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THE WEST ON ITS WAY

NEW MEXICO

HOSPITAL BUILDINGS—W. T. Davis Const. Co., Albuquerque, N. M., has been awarded contract by U. S. Dist. Engineer Office, Albuquerque, for construction of hospital buildings and utilities at an army general hospital in Santa Fe County, N. M., to cost less than $500,000.

DWELLING UNITS—Robt. E. McKee, Los Angeles, has been awarded $99,200 contract by Federal Public Housing Authority for construction of temporary family dwelling units in Roswell, N. M.

AIR FIELD—Lew Spencer, Alpine, Texas, has been awarded contract by U. S. Dist. Engineer Office, Albuquerque, N. M., for work at an air field in Lea County, N. M., to cost about $50,000.

OREGON

BUILDING ADDITION—Halvorson Const. Co., Salem, Ore., has been awarded contract by U. S. Dist. Engineer Office, Portland, for construction of addition to building in Jackson County, Ore.

DEHYDRATING PLANT—Vegetable dehydration plant to process 4,000,000 pounds of beets and potatoes has been approved for McMinnville, Ore.

ALTERATIONS AND ADDITIONS—The Steel Tank & Pipe Co. of Oregon, Portland, Ore., has been awarded contract by U. S. Dist. Engineer Office, Portland, for alterations and additions to U. S. Barge 501, to cost about $52,000.

REMODELING—R. Ritchie & Co., Walla Walla, Wash., has been awarded contract by the War Dept. for remodeling temporary frame building, Umatilla County, Ore.

HOUSING UNITS—Becket, Bridges & Welcer, Portland, Ore., have been awarded $189,753 contract by U. S. Army Engineers for building 100 housing units at Sweet Home, Ore.

HOUSING UNITS—Dan Malarkey, Portland, Ore., has been awarded $144,352 contract by U. S. Army Engineers for construction of 80 housing units at Lebanon, Ore.

UTAH

BUILDINGS—Robt. McKee, Los Angeles, has been awarded $149,800 contract by Federal Public Housing Authority for construction of a commercial building and a community building at Ogden, Utah.

DWELLING UNITS—Lym-Horman Const. Co., Salt Lake City, has been awarded contract by Federal Public Housing Authority for construction of 120 temporary dwelling units and a community building near Hiawatha, Utah.

BUILDING—R. H. Parr, Salt Lake City, has been awarded contract by U. S. Dist. Engineer Office for construction of a dispatcher's house and a gas inspection building at an air depot in Weber County, Utah, to cost less than $50,000.

DUST CONTROL—L. A. Young and Victor Newman, Salt Lake City, have been awarded contract by U. S. Dist. Engineer Office, Salt Lake City, Utah, for dust control work in Tooele County, Utah, to cost less than $50,000.

COLD STORAGE FACILITIES—Cahill Bros., San Francisco, Calif., have been awarded contract by U. S. Dist. Engineer Office, Salt Lake City, for construction of additional cold storage facilities at Bushnell General Hospital, Brigham, Utah.

SCHOOL—F. R. Knowlton, Layton, Utah, has been awarded contract by Federal Works Agency, Salt Lake City, Utah, for construction of school building in Tooele, Utah.

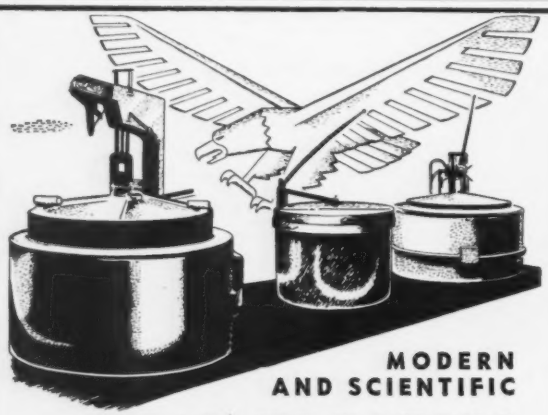
REMODELING—Olson & Lucas, Salt Lake City, have been awarded contract by U. S. Dist. Engineer Office, Salt Lake City, for remodeling offices in warehouses at an air depot at Ogden, Utah.

WASHINGTON

HOUSING UNITS—Halvorson Const. Co., Salem, Ore., has been awarded $219,400 contract by U. S. Army Engineers for construction of 80 family housing units at Metaline Falls, Wash.

COAL DOCK—General Const. Co., Seattle, Wash., have been awarded contract by Federal Public Housing Authority for building a coal dock to supply housing at Manette, Wash.

WAREHOUSE—General Const. Co., Seattle, has been awarded contract for construction of warehouse in Seattle, Wash., for the Northwestern Glass Co.



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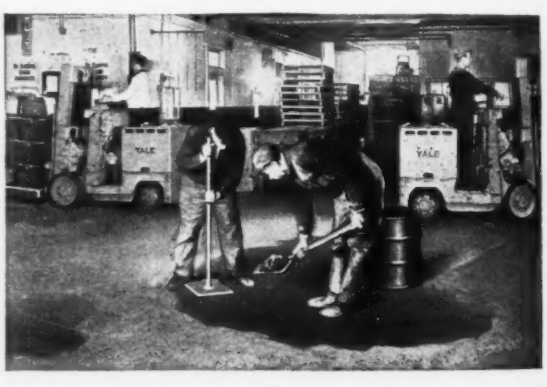

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INSTANT-USE

FLEXROCK CO., 2374 Manning St. Philadelphia, 3, Pa. 564B Market St. San Francisco, Cal. 924B S. Catalina St. Los Angeles, Cal.

GARAGE FACILITIES—Seattle Transit Commission has planned to enlarge facilities at Jefferson and Atlantic garages.

HOSPITAL—Federal Works Agency has allocated $600,000 for 200-bed hospital for King County Medical Service Corp. Equipment and furnishings to cost $125,000.

BUILDING—A. F. Mowat Const. Co., Seattle, awarded contract by U. S. Army Engineers for building in King County, Wash., to cost between $100,000 and $500,000.

RECREATION BUILDING—Woodworth & Co., Inc., and MacDonald Bldg. Co., Moses Lake, Wash., have been awarded contract by U. S. Dist. Engineer Office, Seattle, for construction of recreation building in Grant County, Wash., to cost less than $50,000.

BUILDINGS—Frank Lohse, Seattle, has been awarded contract by U. S. Engineer Office, Portland, for construction of buildings in Walla Walla County, Wash., to cost between $50,000 and $100,000.

BUILDING—Atherton Const. Co., Seattle, has been awarded contract by U. S. Dist. Engineer Office for construction of building in King County, Wash., to cost less than $50,000.

CONSTRUCTION—Axel Osberg, Seattle, has been awarded contract by U. S. Dist. Engineer Office, for additional construction and installation in Snohomish County, Wash., to cost less than $50,000.

WYOMING

SHAFT, HOIST AND HEAD FRAME—Colorado Fuel & Iron Corp. officials, Denver, expect new open shaft, hoist and head frame being installed at the corporation's iron mines at Sunrise, Wyo., to be completed this fall.

OIL FIELD—Phillips Petroleum and the Stanolind Oil and Gas Company have leased 262 acres of land in the Elk Basin oil field in Wyoming for $1,407,500 from the government.

HANGAR—Peter Kiewit Const. Co., Omaha, Nev., has been awarded contract by U. S. Dist. Engineer Office, Denver, for construction of hangar at a modification center in Laramie County, Wyo.

HOUSING UNITS—Federal Public Housing Authority has authorized construction of 240 units for war workers at Cheyenne, Wyo.

BUILDINGS—L. D. Liesinger, Casper, Wyo., has been awarded contract by U. S. Dist. Engineer Office for construction of temporary frame buildings in Natrona County, Wyo., to cost less than $50,000.

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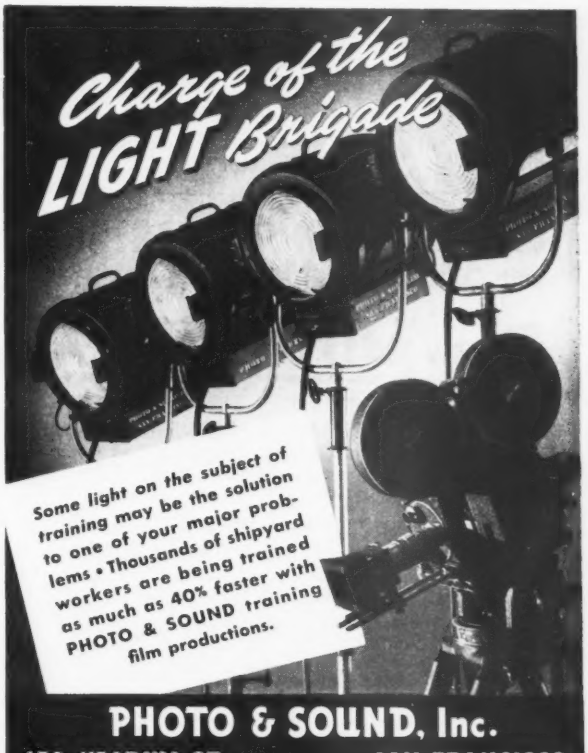

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WESTERN TRADE WINDS

NEWS ABOUT THOSE WHO DISTRIBUTE AND SELL INDUSTRIAL EQUIPMENT AND MATERIALS

C. R. Boteler has been appointed Pacific Coast sales manager of the Rock-Tred Corporation of Chicago, with headquarters at 2003 Rangeview Drive, Glendale, Calif. Rock-Tred Corporation, manufacturers of heavy duty industrial flooring and other maintenance products, believe Mr. Boteler and his staff of field engineers will be of value to western industries in solving their various flooring problems.

Leon Moore, formerly of Denver, is directing sales for Electrical Products, Consolidated, in Seattle.

W. H. Richardson has been appointed general manager of all activities of all divisions of The Timken Roller Bearing Company on the West Coast and in the Orient; and **S. R. Kallenbaugh** has been appointed West Coast district manager of the Steel and Tube Division of the company, with offices at 1526 South Olive Street, Los Angeles.

W. L. Timbers has been appointed director of sales and surveys, and **E. H. Shumate** has been appointed director of installations by the Marsman Company of California, international business engineering firm, who have offices in the Russ Building, San Francisco.

Thomas J. Gerrity has been appointed district sales manager of Albers cereal division with headquarters in Seattle. Previous to this appointment he was Albers sales manager for Oregon.

Claud T. Booth has been made Northwest sales representative for the Reardon Company, paint manufacturers. Booth was formerly with the Dealers Supply Company of Portland.

Ray B. Fannin, who has been selling LP-Gas equipment in Colorado for a number of years has been made representative of the Gasair Corporation of San Francisco, in Colorado, Wyoming, South Dakota, Nebraska and Kansas.

John J. Nielsen has been named plastics specialist for the Los Angeles area by the Westinghouse Electric & Mfg. Company.

G. A. MacGillivray, associated with the Franklin Process Co. of Providence, R. I., for several years, has come out to the coast to be West Coast sales manager for Eutectic Welding Alloys Co. of New York.

E. Nuber, formerly manager of the Akron branch office and factory of the Bristol Co., Waterbury, Conn., has been appointed manager of the Pacific Coast branch office and factory at San Francisco. Before joining the Bristol staff, he was with Western Electric Co. as production engineer.

R. W. Luzius is the new representative for the Pacific Coast area for General Alloys Co., Boston. He will make his headquarters at Beverly Hills, Calif.

Luther L. Sheppard will serve International Business Machines Corp. as resident manager of their new plant at San Jose, California. He was formerly manager of the Indianapolis office. **Roger R. Williams** is superintendent of the new plant.

Conrad Meeth has been named sales manager of Moore Drydock Company, succeeding **Frank H. DePue** who has joined the marine surveying firm of Hough & Egbert.

Here is the correct picture of **Harry L. Smith,** recently appointed vice president and general sales manager of Kelite Products, Inc., Los Angeles. The picture used in our August issue was that of Charles E. Parks, Western Manager of Ilg Electric Ventilating Company.

The Pacific Coast territory for Hycar Chemical Company, who have established west coast warehouse facilities in Los Angeles, has been assigned to **D. C. Maddy.**

San Francisco has been chosen as the headquarters for the Western states by the American Breddo Corporation of New York City, with **Rudy Josephs** as manager of the West Coast Division.

Herluf Nielsen is now chief metallurgist in charge of the technical department of Kinney Aluminum Company, Los Angeles, one of the largest foundries on the Pacific Coast producing heat-treated aluminum and magnesium alloy sand and permanent mold castings. Before coming to Kinney Aluminum, Nielsen was director of physical metallurgy at Washington State College for four years.

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THE SHOWCASE

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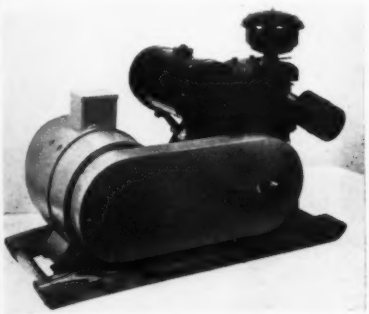
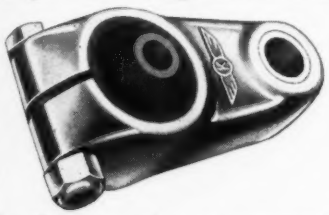


current, are meeting wartime needs for portable power and illumination. They provide illumination for remote construction camps, logging camps, advanced Army bases, etc. All standard electrical equipment and tools can be operated by power taken from these generators. One man can easily move and set up an Epcon. *Electrical Products Consolidated, Seattle, Wash.*

Aircraft Connector Link — Engine Cowl Ring Connector Link for aircraft incorporates a rubber bushing that absorbs engine and flight vibration, together with a sim-



ple rocker arm action or compensating principle that takes up normal engine heat expansion. This new Kinney link is permanent molded of aluminum alloy, heat-treated under continuous metallurgical control and X-ray tested, has an anodized finish and is completely machined and assembled. *Kinney Engineering Company, Los Angeles, Calif.*

Floor Compound—A four-purpose compound which never spoils or sours, and is claimed to absorb grease and oil, to be non-skid, to smother fires, and to serve as a dustless sweeping compound, even after use as a grease or oil absorbent. Packed in 25-pound net containers. *AleXitE Engineering Company, Colorado Springs, Colo.*

Plastic Pipe Seal Plugs— These light, tough, non-corrosive plastic seals protect threads from damage, moisture, dirt, weathering and rust, according to the manufacturer. Precision molding in ⅜, ½, ⅝, ¼, and 1 inch sizes. Other sizes can be supplied on application. *American Molded Products Company, Chicago, Ill.*

Chipping Hammer—An improved chipping hammer, the Universal Tomahawk, has the exclusive feature of interchangeable and replaceable cone and chisel bits and handle, and is used for all types of weld cleaning. Snug socket fit of bit shank, positioned and held by set-screw, prevents possibility of loosening. *Atlas Welding Accessories Company, Detroit, Michigan.*

Mechanic's Light—Designed originally to illuminate fuselage interiors of large aircraft during construction, double-circuit mechanic's light with receptacles for plugging in small power tools and additional

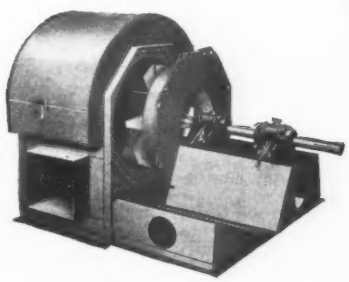
fixtures, is being adapted to other industrial uses. Two models are available: 24-inch unit containing two 20-watt lamps and 48-inch unit containing two 40-watt lamps. Both units operate on either 50 or 60 cycle current. *Lumidor Mfg. Co., Los Angeles, Calif.*

Portable Test Rig — Portable gear variable speed test rig for aircraft testing arranged compactly on drilled flat steel base, can be transferred from one location to another for testing vibrators, pumps, etc. The three output shafts in line have speed ranges of 600 to 3600, 300 to 1800, and 150 to 900 rpm. respectively. The speed range of shaft extension for tachometer is 150 to 900 and a triple-scale indicator is used for the three speed ranges. Speed of each shaft can be minutely varied by simple turning of hand regulating wheel. *Link-Belt Co., Chicago, Ill.*

Black Plastic Spray Gun — Weighs less than aluminum model it replaces, is not affected by thinners, solvents, paint removers, etc., and has a good impact strength.

Operating mechanism is similar to former design, only change being body, now made of plastic. *Eclipse Air Brush Co., Inc., 390 Park Ave., Newark, New Jersey.*

Temperature Fan—A fan for work in temperature up to 1500 degrees Fahr. The rotor shaft, bearings and mounting of each unit can be pulled out as a unit for inspec-



tion or servicing. Each fan is equipped with a 6-blade rotor and heavy duty bearings to insure performance under severest operating conditions. Ten sizes are offered, ranging from 800 to 40,000 cubic feet per minute. *Mahr Mfg. Co., Minneapolis, Minn.*

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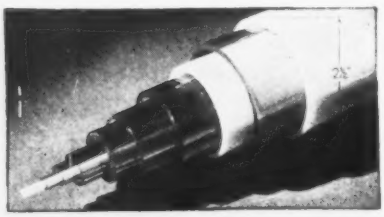
THE SHOWCASE—*(Cont'd from Pg. 55)*

Welding Machine—Model WA-200 P&H Welder—Machine with proper arc characteristics and other development enabling welder to readily adjust his current within desired limits without breaking arc. Used successfully by aircraft plants. *Harnischfeger Corp., Milwaukee, Wis. Lemaster-Conzett Co., Distributors, Los Angeles, Calif.*

Seamless Plastic Tubing—Tulox TT Seamless plastic tubing is available in all sizes up to 2½ inch outside diameter. It is



extruded from Tennessee Eastman cellulose acetate butyrate and available from warehouse stocks throughout the country through Crane Co. and Julius Blum & Co. *Extruded Plastics, Inc., Norwalk, Conn.*

Identification Badge—A badge made entirely of plastic. Its two parts are cast by the injection method and together form a

lightweight badge only 1/8 inch thick. It is claimed to be tamperproof. *Royal Emblem Company, 32 John Street, New York City, N. Y.*

Light Signal—The "Signalette" operates by fluorescent reflection of "back light" and dependably shows signals even in total darkness. The new indicator banishes the blur and glare of the light-transmitted signals, does not dim out in bright sunlight, and makes for better vision in night-flying. While it is primarily designed for aircraft, it is believed that many other uses will be found. *Littlefuse, Inc., Chicago, Illinois, and El Monte, Calif.*

Dust Collector—Portable equipment of new design for collecting dust from industrial operations, the Bargar "Safe-Aire"

is said to be capable of handling such light dusts as flour and finely powdered soaps as well as heavy ones like steel filings. It has a capacity of 600 cubic feet per minute and is intended primarily for collecting dust from a single grinder or other dust-producing machine, and blowing clean air back into the room. *Bargar Sheet Metal Company, Cleveland, Ohio.*

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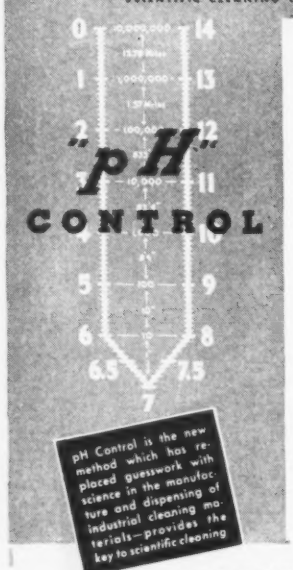
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Industrial Pumps—Westco Industrial Pumps Catalog No. 43, well illustrated, is designed to give the complete story of each Westco pump, also two pages on the Pomona pumps. *Joshua Hendy Iron Works, Pomona Pump Co. Div., Pomona, Calif.*

1301

Manganese Steel—How manganese steel is helping industry in general to "carry on" behind the lines is the theme of Bulletin 543-G, "Manganese Steel for General Industry." In addition there are sections devoted to the company's X-ray facilities, its metallurgical and testing laboratories, to technical formulæ and a question-and-answer dissertation on manganese steel. *American Manganese Steel Div., American Brake Shoe Company, Chicago Heights, Ill.*

You owe it to yourself to keep posted—only the efficient business survives under the strain and pressure of the war effort. Literature listed in these columns may be just the answer to your need for greater production, substitute materials or knowledge of how to care for your equipment. Just drop a note to Western Industry, 503 Market St., San Francisco, and copies will be forwarded to you. If you do not use business letterheads; please name your company affiliation.

1302

Welding—"Handbook for the Welding and Cutting Operator," 20-page pocket-size booklet is helpful in instructing users of the oxy-acetylene welding and cutting process how to prolong life of their equipment. *International Acetylene Association, New York.*

1303

Electrode Index—Electrode comparison chart helps simplify buying of competitive welding electrodes. The chart details principal AWS and ASTM electrode classifications, indicates which electrodes produced by 20 leading manufacturers meet the different requirements, and shows what alternate brands might be used successfully should a specified electrode not be available. *Air Reduction, N.Y.*

1304

Lunch Box—"How to Pack Lunch Boxes for War Workers" simplifies planning and packing of lunches to please those who eat them and yet measure up to rules of good nutrition. *Westinghouse Electric & Mfg. Co., Mansfield, O.*

1305

Springs—Manual of practicable, up-to-the-minute information and data about springs for mechanical and industrial uses to save time and present needed information in convenient form. Contains formulas of spring design and engineering for compression, extension, torsion, etc.; with illustrations, diagrams and tables. Time-saver in making out specifications is afforded in detachable extension sheets. *Mid-West Spring Mfg. Co., Chicago, Ill.*

1306

Shipping Practices—Acme Process News No. 13, informative house organ, has articles on how speedier carton stitching is accomplished, how military supplies, explosives, dehydrated juices, etc., are prepared for a safe journey. *Acme Steel Co., San Francisco, Calif.*

1307

Lubricating System—8-page bulletin "The Multival System" describes improved method of providing positive lubrication to a group of bearings from a central distributing block. Ask for Bulletin 15. *The Farval Corp., Cleveland 4, Ohio.*

1308

Mechanical Lifting Jacks—16-page maintenance manual for users of mechanical lifting jacks. Proper use of jacks for best and safest results, problems of individual fields, basic types of mechanical jacks and how they operate, construction details, descriptions and explanatory diagrams are included. *The Duff-Norton Manufacturing Co., Pittsburgh, Penn.*

1309

Valves—"How to Know Valves" chart, printed on heavy cardboard, ideal for posting, gives breakdown of valves into four basic types, shows simple, visual line illustrations, explains what service the valves perform, how they operate and where used. This recognition chart also gives flow characteristics of each valve and symbol sketches. *Dept. S.P., Reading-Pratt & Cady Div. of American Chain & Cable Co., Inc., Bridgeport, Conn.*

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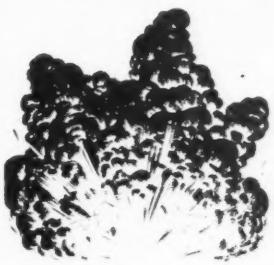
Explosion-Safe

SPARK-PROOF **FLOORS**

MEET U. S. REQUIREMENTS



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YOURS FOR THE ASKING—*(From P. 57)*

1310

Sanitation and Maintenance Cleaning—24-page digest concisely describes 97 commonly recurring sanitation and maintenance cleaning or related jobs generally performed in vegetable canning, fruit preserving, dehydrating, quick freeze and other food processing plants, where use of Oakite materials and techniques is helping to facilitate quality control, increase sanitation efficiency and improve plant maintenance. *Oakite Products, Inc., Los Angeles and New York City.*

1311

Construction & Industrial Equipment—A 186-page 20th anniversary catalogue, outlining construction and industrial equipment sold by the company has just been published. This illustrated catalogue contains information on specifications of equipment manufactured by over 35 concerns for which the company is the Southern California distributor. *Garlinghouse Brothers, Los Angeles, Calif.*

1312

Aircraft Servicing Tools—20-page catalog "Amsco Service Tools for Curtiss Electric Propellers," Catalog C contains complete information on necessary tools for servicing and adjustment of Curtiss electric propellers. Also available, information on new propeller governor test bench and new portable spark plug testing unit. *Airplane Mfg. & Supply Corp., Mfg. Div., North Hollywood, Calif.*

1313

Piping—Illustrated handy reference book covers various ways in which piping can be used and lists present market prices for every kind and size of fabricated piping. *Flori Pipe Company, Dept. B-15, St. Louis 15, Mo.*

1314

Wire Rope Fitting—Bulletin No. 71 illustrates uses and applications of Gar-Bro Shimble, a wire rope fitting that is both a shackle and a thimble (or socket) and has many uses in the construction and industrial field. *Garlinghouse Bros., Los Angeles, Calif.*

1315

Post War—24-page booklet "The New Washington State" suggests approach to solution of full employment after victory through the town hall meeting method including steps for organizing and carrying the work forward. *State Planning Council, Olympia, Wash.*

1316

Welding Machines—Printed matter on the Thomson-Gibb line of spot, butt, flash, seam and special types of electric welding machines in all useful sizes is available. *Victor Equipment Company, San Francisco, Calif.*

1317

CMP—"Handy Guide and Outline of Procedure for Manufacturers under CMP" is indexed for cross reference. *Education and Inquiry Branch, Controlled Materials Plan Div., War Production Board, Washington, D.C.*

1318

Electronics—"Primer of Electronics" (GED-1068) gives simple introduction to the electron and the principles that govern its use. *General Electric Electronics Dept., Schenectady, N. Y.*

1319

Hydraulic Laboratory Presses — Bulletin 350-A gives complete picture of company's line of hydraulic laboratory presses and equipment. *Watson-Stillman Company, Roselle, N. J.*

1320

Maintenance—Handbook No. 143 tells how to keep motors and generators running continuously at peak efficiency without dismantling. *Ideal Commutator Dresser Co., Sycamore, Ill.*

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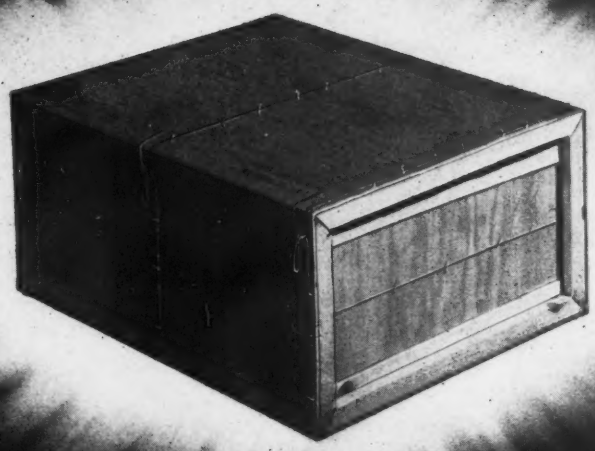

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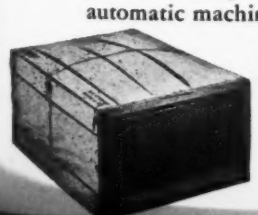

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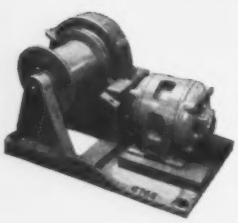

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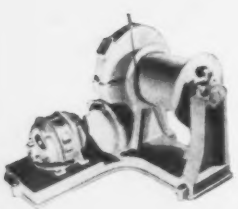

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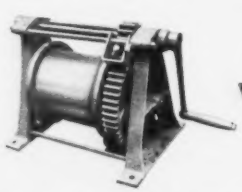

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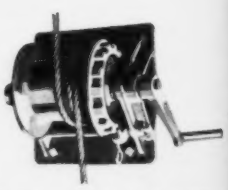

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